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Office of Emergency
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Updating Remedy Decisions at Select Superfund Sites

Biannual Summary Report FY 1998 And FY 1999

Executive Summary (FY98 and FY99)

During the last two years of implementation, *Updating Remedy Decisions* has been characterized by the U.S. General Accounting Office (GAO) as one of EPA's most successful Superfund reforms. In FY98 and FY99, EPA updated approximately 160 remedies, reducing estimated future cleanup costs by more than $710 million. Other key successes and findings include the following:

- Most remedy updates completed during FY98 and FY99 were the result of additional technical information gathered as part of the remedy design process. A small number of remedy updates were the result of non-technical changes in applicable, relevant and appropriate requirements (ARARs), land use, or required cleanup levels. Another small number of remedy updates were the result of State input or community preference which focused on either technical or non-technical modifications to the remedy.

- EPA tracked all remedy updates during FY98 and FY99; most of these updates were reform-related, while others were not. In FY98, the total estimated cost savings were in excess of $280 million, of which over $245 million was based on scientific and technological advancements. For remedy updates completed in FY99, the total estimated cost savings was in excess of $430 million, of which over $420 million was based on scientific and technological advancements. There were 10 remedy updates in FY98 that resulted in cost increases totaling an estimated $57.2 million, and there were 14 remedy updates in FY99 that resulted in cost increases totaling an estimated $58.0 million.

- Estimated cost savings for 98 individual remedy updates during FY98 and FY99 ranged from a negligible amount to over $87 million, with most remedy updates generating savings under $10 million. There were also 24 remedy updates that resulted in estimated cost increases of over $120 million, with a majority under $2 million.

- Remedy updates generally occurred in the remedial design phase of the cleanup process and were more likely to be documented with Explanations of Significant Differences (ESDs) than Record of Decision (ROD) Amendments. Over the two-year period, there were 105 ESDs and 54 ROD Amendments representing remedy updates with both cost savings and increases.

- Most remedy updates during FY98 and FY99 were initiated by parties outside of EPA *(e.g.*, potentially responsible parties (PRPs), States, communities, Federal facilities). Over the two-year period, parties outside of EPA initiated 66 updates and EPA initiated 55 updates (these numbers do not include 38 updates initiated by more than one party).

- Over the two-year period, the most commonly addressed medium was soil (99 updates) followed by ground water (58 updates). Nine other media types were addressed by remedy updates during FY98 and FY99.

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1.0 Introduction (FY98-FY99)

Updating Remedy Decisions, announced in the third round of Superfund Reforms in October 1995, is one of a broad range of administrative reforms undertaken to improve efficiency, speed, and fairness of the Superfund program. Specifically, the Reform encourages the Regions to revisit selected remedy decisions at sites where significant new scientific information, technological advancements, or other considerations will protect human health and the environment while enhancing overall remedy cost effectiveness.

This report contains an evaluation of remedy updates completed during FY98 and FY99. For remedy updates completed in FY96 and FY97, see the document, "*Updating Remedy Decisions at Select Superfund Sites, Summary Report, FY 1996 and FY 1997*," July 1998, OSWER Directive 540-R-98-017 at EPA's website: **http://www.epa.gov/oerrpage/superfund/programs/reforms/docs/urd96-97.pdf**. The Summary Report for FY96 and FY97 contains the background information of the Reform, a description of the Reform, the process for implementing the Reform, and Regional implementation plans from each of the ten EPA Regions.

This report:

- Provides a summary of Superfund sites where remedies have been updated during FY98 and FY99;
- Highlights estimated future cost reductions (cost savings) or cost increases expected to result from updated remedies; and
- Presents stakeholders with information on the role of remedy updates in improving Superfund implementation.

EPA sought to encourage remedy updates that would incorporate such new information into existing site cleanups. As a whole, these reforms were implemented to make Superfund faster, fairer, and more efficient.

It is important to emphasize that this initiative does not signal any variations in the Agency's current policies regarding site cleanup, including policies regarding remedy selection, treatment of principal threats, preference of permanent remedies, establishment of cleanup levels, or the degree to which remedies must protect human health and the environment. EPA remains committed to the protection of public health, welfare, and the environment.

2.0 FY98 and FY99 Results

EPA completed approximately 159 remedy updates in FY98 and FY99, saving over $710 million in estimated site cleanup costs, while at the same time creating increases in estimated site cleanup costs of about $115 million.

Updates during FY98 resulted in a total estimated cost savings of over $280 million, of which over $245 million resulted from updates of the kind identified in the Reform Guidance. Updates during FY99 resulted in a total estimated cost savings of over $430 million, of which over $420 million resulted from updates of the kind identified in the Reform Guidance.

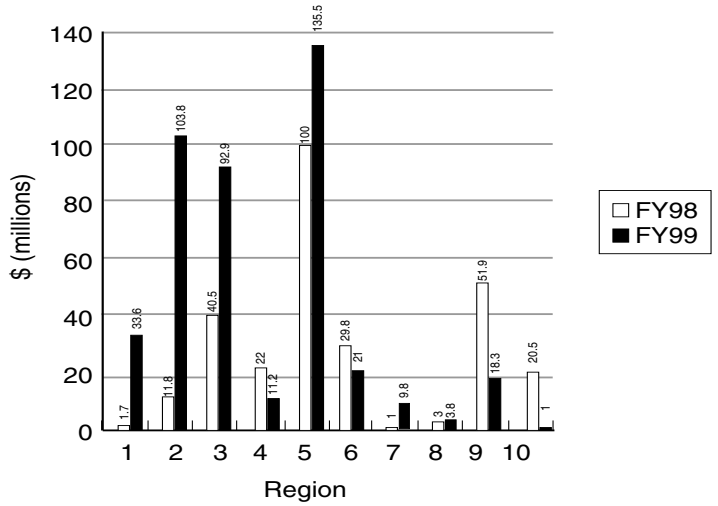
(See the Reform Guidance, "Superfund Reforms: Updating Remedy Decisions," OSWER Directive 9200.2-22, dated September 27, 1996, at EPA's website: **http://www.epa.gov/oerrpage/superfund/programs/reforms/remedy/index.htm**.)

The estimated cost savings per update ranged from a negligible amount to $87 million, with all EPA Regions reporting savings in each year reviewed. *Exhibit 2.2* shows the amount of estimated savings by fiscal year. (Note: *Exhibit 2.2* may not include all remedy updates from FY98 and FY99 because of limitations on EPA Regional accessibility to remedy update information.)

Most of the remedy updates generated savings of less than $10 million per update, as shown in *Exhibit 2.2*. (Note: Cost estimates for several remedy updates are either unavailable to EPA or incomplete at the time of this writing. These are labeled NA/TBD (Not available/To be determined) in Appendices A, A.1, and A.2.)

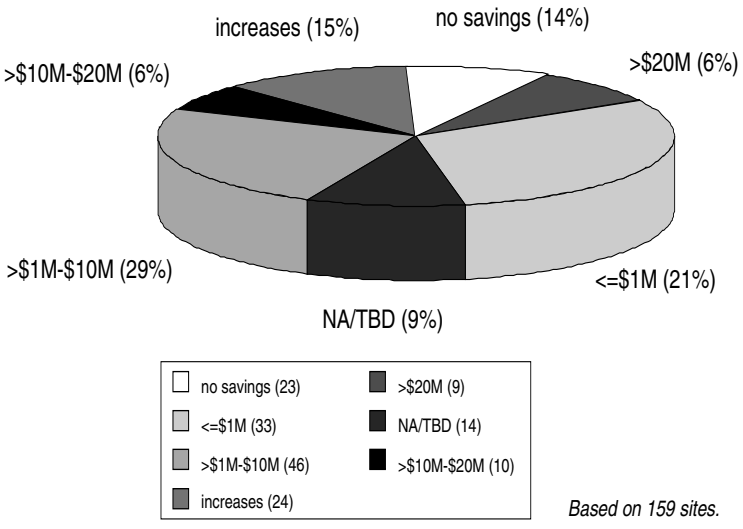
EPA Regions also reported updated remedies which generated cost increases during FY98 and FY99. The FY98 cost increases for 10 remedy updates totaled $57.2 million. The FY99 cost increases for 14 remedy updates totaled $58.0 million. Most of these remedy updates generating estimated cost increases during FY98 and FY99 are less than $2 million per update. The remedy update cost increase for FY98 and FY99 occur in 7 different EPA Regions and no EPA Region has more than 5 increases over the two-year period.

Exhibit 2.1: Estimated Remedy Update Savings by Region for FY98 and FY99



Recent advances in the area of soil and ground water science and remediation made these types of decisions good candidates for remedy updates. *Exhibit 2.3* shows that during FY98 and FY99, updates of soil remedies were the most common (99 updates), followed by ground water remedies (58 updates. The remaining updates pertained to nine other media, as depicted in *Exhibit 2.3*. These media are consistent with media typically found at contaminated Superfund sites.

Exhibit 2.2: Estimated Savings Per Remedy Update for FY98 and FY99



More detailed information regarding remedy updates can also be found in Appendices A, A.1, and A.2. Specific remedy updates are listed by Region and by site, and include the following information:

- Type and date of remedy update;
- Update initiator;
- Media involved;
- State and community involvement;
- Estimated resource demands;
- Estimated cost savings or cost increases; and
- Summary of remedy change and factual basis.

Table 2A depicts the number and kind of remedy updates that were completed in FY98 and FY99. It shows that not all remedy updates generated cost savings or cost increases. In some cases, the remedy updates generated neither cost savings or cost increases; in other cases, the numbers are yet to be determined or are unavailable at the time of compiling this report. The data do not differ significantly from FY98 to FY99.

Exhibit 2.3: Updates by Medium for FY98 and FY99

Medium	FY98	FY99	Total
Soil	50	49	99
Ground Water	31	27	58
Sediment	6	11	17
Debris	9	3	12
Other	4	3	7
Sludge	3	3	6
Surface Water	2	1	3
Leachate	1	2	3
Air	1	2	3
Gas	1	2	3
Solid Waste	0	0	0

The information in Exhibit 2.3 is based upon 159 sites. However, since remedy updates often involve more than one medium at a site, the total number of updates by medium is more than 159.

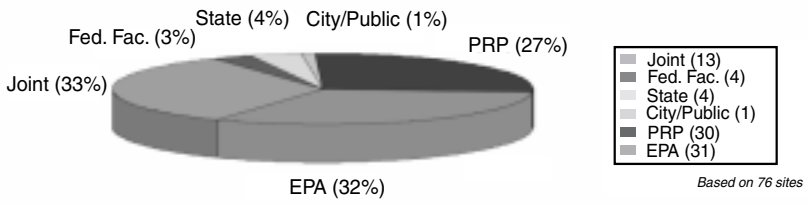
Table 2A: Number and Kind of Remedy Updates for FY98 and FY99

	FY98	FY99	Total
Total # of Remedy Updates	76	83	159
# Updates With Estimated Savings	48	50	98
# Updates With No Savings	12	11	23
# Updates With Estimated Increases	10	14	24
# Updates NA or TBD	6	8	14

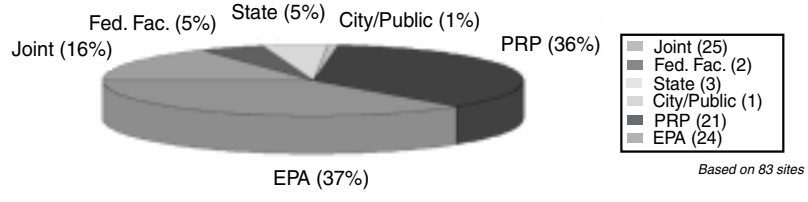
3.0 Remedy Update Process

After a remedy decision has been completed at a site (*i.e.*, a ROD is signed), new information may be received or generated that could affect how the remedy selected in the ROD should be implemented. This information may be supplied by a PRP, a Federal agency conducting the cleanup, the support agency (*e.g.*, another Federal agency or State/Tribe), or the public or other interested parties. Data for FY98 and FY99 (see *Exhibit 2.4*) indicate that 66 remedy updates were initiated by parties outside of EPA (*e.g.*, PRPs, States, communities,

Exhibit 2.4: Remedy Update Initiators for FY98



Remedy Update Initiators for FY99



Federal facilities) compared to 55 updates initiated by EPA. In addition, 38 remedy updates have joint initiators because information arrived simultaneously from several different parties. *Exhibit 2.4* shows that the relative percentage of remedy update initiators were not significantly different from FY98 to FY99.

Although the types of new information that could affect remedy decision-making vary widely, the Reform Guidance recommends that EPA pay particular attention to information which shows that:

- Updating the remedy may result in a more cost-effective cleanup;
- Physical limitations imposed by the site or the contaminants may warrant changes in the cleanup goals; or
- Site conditions may warrant reducing the scope of the site monitoring after cleanup.

As outlined in the Reform Guidance, the basic process that Regions should use to consider proposed remedy updates consists of three steps: identification and prioritization, technical review, and implementation.

- **Identification and Prioritization** involves assessing the update request to determine the type of change (*e.g.*, remedial method, cleanup standards, cleanup area), the resources required to fully evaluate it, and any potential increase or decrease in protectiveness or cost. To ensure that the Region's rationale for prioritizing update reviews is clear and equitable, Regions are encouraged to carefully track all requests for remedy updates. Review and consideration of potential remedy updates should not result in any delays in the completion of work products or other remediation activities required by the existing ROD and enforcement instruments (*e.g.*, unilateral administrative orders (UAOs) or consent decrees (CDs)).
- **Technical Review** evaluates the site-specific information supporting both the current remedy and the update request to determine whether or not the remedy update was warranted. This information is typically collected by the site's lead entity (*e.g.*, the Federal agency, Federal facility, PRP, State, or Tribe).
- **Implementation** involves preparing and filing the necessary documentation (a note or memorandum to the Administrative Record file, an ESD, or a ROD Amendment) to support the update, consulting with the State and community, and physically conducting the updates at the site.

3.1 Determination of Remedy Update Type

In order to categorize the update, remedy update teams ask the following questions:

- **Scope** - Does the update alter the scope of the remedy (*e.g.*, the physical area of the response, remediation goals to be achieved, or type and volume of wastes to be addressed)?
- **Performance** - Would the update alter the performance (*e.g.*, treatment levels to be attained, methodology used to achieve cleanup goals, and new technology not considered in the original ROD) and thus raise concerns about the protectiveness or long-term effectiveness of the remedy?
- **Cost** - Does the update alter remedial costs and are the changes in costs of such a nature that they could not have been anticipated based on: (1) the estimates in the ROD; and (2) the recognized uncertainties associated with the selected remedial alternative?

Based on this evaluation, and depending on the extent or scope of the modification being considered, the lead agency must determine the type of update involved (*e.g.*, nonsignificant or minor, significant, or fundamental change to the scope, performance, or cost of the original remedy). An aggregation of nonsignificant or significant changes could result in a fundamental change overall. Post-ROD updates fit into one of these categories:

- **A nonsignificant or minor change** usually arises during design or construction when modifications are made to the functional specifications of the remedy to optimize performance and minimize cost. Such changes may affect the type or cost of materials, equipment, facilities, services, and supplies used to implement the remedy. Minor changes might include a slight increase in the volume of treated soil, a change in disposal location, or a modification in ground water monitoring specifications.
- **A significant change** generally involves incremental change to a component of a remedy that does not fundamentally alter the overall remedial approach. A significant change might involve an increase of over 50 percent in the volume of soil to be remediated, a change in reasonably anticipated land use following the remedy, or a change in an ARAR that has impacts on cleanup levels and other parameters.
- **A fundamental change** involves an appreciable change or changes in the scope performance, and/or cost of a remedy or may involve a number of significant changes that together have the effect of a fundamental change. Fundamental changes result in a reconsideration of the waste management approach (*e.g.*, change in the primary remedy for the wastes, residual risk, cleanup technology) selected in the original ROD and must include a formal public comment period. A fundamental change might involve selecting a different primary treatment technology because of community preference, discovery of additional contaminants, or the determination that less treatment is needed than originally expected.

For more information on remedy update type, see *"A Guide to Proposing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents,"* OSWER Directive No. 9200.1-23P (July 1999). Enforcement decision documents may also need to be modified, depending on the type of remedy update and the language in the order or consent decree, if there is an order or consent decree.

The type of change will determine which document EPA uses to update the remedy: a memorandum or note to the Administrative Record for a nonsignificant or minor change; an ESD for a significant change; or a ROD Amendment for a fundamental change. *Table 2B* indicates that there were 105 ESDs and 54 ROD Amendments completed during FY98 and FY99.

Table 2B: Types and Percentages of Remedy Updates for FY98 and FY99

	FY 98	FY 99	Total
ESDs	53 (70%)	52 (30%)	105
ROD Amendments	23 (62%)	31 (38%)	54

In general, remedy updates tend to occur during remedy design and represent a significant but not fundamental change to the remedy. Consequently, most remedy updates correspond to at least one of the following situations: the scope of the remedy has changed (*e.g.*, volume increase or decrease); the performance of the remedy can be modified or optimized (*e.g.*, change in disposal or discharge point); or there is a more cost effective way to implement the remedy.

In some situations, additional contamination is identified or the original remedy does not meet the required cleanup levels specified in the ROD. In those cases, the determination for an updated remedy may result in estimated cost increases.

3.2 State/Tribal and Community Roles

State/Tribal Roles

States play an important role in the modification of remedy decisions. Both the NCP Section 300.515 and the Model CERCLA RD/RA Consent Decree (which forms the basis for most consent decrees) provide an opportunity for States to review and comment on specified steps in the remedy selection. Agreements between EPA and States, including contracts, may require modification following an update to a remedy. Furthermore, the Model Consent Decree states that EPA will provide the State with a reasonable opportunity to review and comment on any proposed modifications. Additional information regarding the role of States and supporting agencies in the remedy modification process can be found in *"A Guide to Preparing Superfund Proposed Plans, Records of Decision and Other Remedy Selection Decision Documents,"* OSWER Directive 9200.1-23P (July 1999).

Native American Tribes are afforded substantially the same treatment as States with respect to certain provisions of CERCLA (see CERCLA Section 126; NCP Section 300.505). A Federally-recognized tribal government, with responsibilities including governmental functions such as environmental protection and jurisdiction over a Superfund site, can be treated essentially the same as a State. (see NCP Section 300.515).

Community Roles

Most remedy updates in FY98 and FY99 involved State participation and/or community involvement. Although the initiation of a formal public comment period is required only in the case of a fundamental update (*i.e.*, ROD Amendment), most remedy updates, regardless of their significance, have a substantial community involvement component (see NCP Section 300.435(c)(2)(i) and (ii)). For example, documents pertaining to the site, including any information on remedy updates, are placed in the Administrative Record or at the site repository located within the area of the site (*e.g.*, local library). Other activities, including a public availability session, public meetings, issuance of fact sheets about the site, and the release of an amended proposed plan, may allow the surrounding community and other interested parties an opportunity to learn more about the site and present their opinions on remedial activities. Refer to the individual site summaries in Appendices A.1 and A.2 for specific activities related to State participation and community involvement that were part of the remedy update process for each update completed during FY98 and FY99.

3.3 Remedy Review Duration

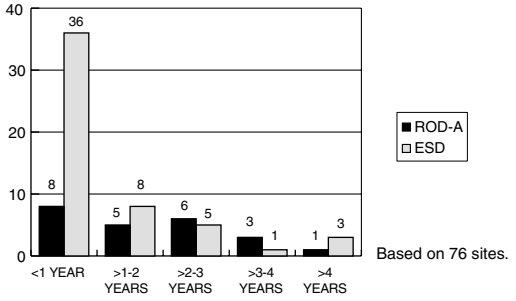
Reviewing site-specific material and completing the ESD or ROD Amendment, as demonstrated in *Exhibit 2.5*, took less than a year for an overwhelming majority of the remedy updates completed during FY98 and FY99. Of note, is a slight increase in the number of remedy updates with extended review periods. An examination of sites with longer review periods suggests that the review durations were influenced by:

- A lengthy, but important public involvement phase;
- An extensive verification/pilot test period following the discovery of new performance, technical, or toxicological data;
- The discovery of unexpected contamination late in the remedy design phase; or
- A redefinition of land use.

Specific examples of remedy changes whose reviews lasted more than one year, that are summarized in *Exhibit 2.5*, may be found in Section 4.2 of this document.

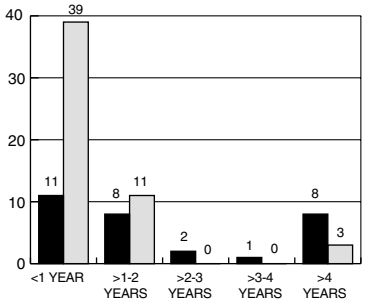
Exhibit 2.5

Approximate Review Time for Remedy Updates in FY98



Based on 76 sites.

Approximate Review Time for Remedy Updates in FY99



Based on 83 sites.

4.0 Lessons Learned

During the last two years of reform implementation, EPA has gained insight into ways of successfully updating site remedies. The following sections detail information collected regarding reform benefits, site examples, and comments from stakeholders.

4.1 Benefits

This Reform has been very successful in bringing past decisions in line with current science and technology. By doing so, these updates improve the cost effectiveness of site remediation while ensuring reliable short- and long-term protection of human health and the environment. The quantifiable results of this Reform have been announced in EPA's testimony before Congress, described in private industry evaluations of Superfund reforms, and included in a report by the U.S. General Accounting Office. Of additional note is EPA's overwhelmingly positive record of responding to remedy update requests made by outside parties.

4.2 Site Examples

In many cases, remedies were updated because of a decrease or increase in contaminant volume or because of an inability to achieve desired results in a test of the ROD-selected treatment or contaminant technology during the remedial design phase of the cleanup. Although all updates described in Appendix A represent site-specific situations, it is possible to use some as site examples of the remedy update situations that occurred during FY98 and FY99.

Updates Based on New Technology

Some updates were the result of new technology that was not considered in the original remedy. For instance, the results of an air sparging pilot test lead to a change in the remedy at the **Hastings Ground Water Contamination site in Nebraska**. Conventional soil vapor extraction and a ground water pump and treat system were replaced with air sparging near the source area and areas of the ground water plume with high concentrations contamination, which increased the rate of volatile organic removal from ground water via soil vapor extraction. Now, the ground water cleanup may be completed sooner than it would have under the original pump and treat remedy with a result of $1.0 million in estimated savings.

In some cases, the performance of a remedy is discovered to be less effective than originally expected. For example, after two years of vacuum extraction, the original remedy performance declined at the **Tibbetts Road site in New Hampshire**. At the conclusion of extraction and treatment, a remedy update resulted because it was found that residual concentrations were above cleanup levels. These residual concentrations were found to be amenable to treatment with phytoremediation and bioremediation. Site cleanup levels remain unchanged and the remedy update may result in $140,000 in estimated cost savings.

Updates Based on New Performance Data

New performance data can provide the needed information for updating remedies. At **Bofors Nobel, Inc. in Michigan**, the changes documented in the ESD were based on new information received subsequent to the issuance of the ROD, which required cleanup to soil performance standards and ground water treatment and discharge to a publicly-owned treatment works (POTW). A new calculation of performance standards was based on an error correction, revised risk factors, and revised guidance that resulted in undisclosed cost savings.

Another example of a remedy update based on new performance data occurred at the **Woodlands site in New Jersey**, where traditional ground water pump and treat was replaced with air sparging/soil vapor extraction and natural attenuation. The remedy update resulted from a BTAG memo which indicated that the ground water pump and treat system would dewater nearby wetlands. During remedial design, the PRP successfully identified alternatives that would meet ROD objectives at a much lower cost and the resultant estimated savings exceeded $87.0 million.

Coordinating the Update

Some remedy updates involve coordination among EPA, other Federal agencies, and State and local government agencies. For example, at **MCAS Cherry Point in North Carolina**, EPA coordinated the remedy update with the State and the Federal facility. The ROD specified the number of extraction wells in the original remedy, but this changed during implementation of the remedial design and remedial action. The expanded extraction system in the remedy update can treat all areas within a particular operable unit above a certain threshold level of volatile organic compound concentration. Moreover, the treatment plant was consolidated with the currently operating Industrial Waste Treatment Plant with resultant savings of approximately $1.0 million.

One update at the **Coakley Landfill in New Hampshire** involved coordination between EPA, the PRP, and the State. The original remedy included collection and treatment of landfill leachate, however contaminant concentrations decreased after a landfill cap was installed. Since most cleanup levels had already been met, without leachate collection and treatment, the remedy update saved an estimated $14.0 million.

EPA and the PRPs jointly initiated the change at the **Springfield Township Dump in Michigan**, along with significant community involvement. The original remedy involved the on-site incineration of PCB-contaminated soil and was updated to include excavation and treatment via soil washing, a limitation on the potential future exposure and treatment of ground water. The remedy was altered to reflect current State standards and saved an estimated $26.0 million.

State Input in the Update

States can be either the lead or support agency for a remedy update. The remedy update was State-lead at the **MacGillis & Gibbs/Bell Lumber & Pole site in Minnesota**, although the change initiators at the site also included EPA and the City of New Brighton. The high cost of incineration and soil washing which totaled $26.0 million, as well as the unreliability of soil washing, prompted reevaluation of the remedies at the site. In addition, EPA's Presumptive Remedy Guidance was issued subsequent to the relevant RODs and had identified biological treatment as the Agency's primary presumptive remedy for wood treater sites which further prompted

the reevaluation of the existing remedies. The original remedies involved soil washing involved soil washing and on-site incineration of debris and some soils. The remedy update involved RCRA capping of an operable unit, off-site disposal, and biological/chemical oxidation-reduction treatment of some soils with off-site landfilling of the treated soils. The resultant savings were estimated to be $16.0 million.

At the **Charles George Landfill in Massachusetts**, EPA and the State worked closely on proposed remedy changes at the site. EPA and the State held frequent informal meetings to keep the community updated on all on-going activities, including changes to the remedy. The selected remedy for ground water included an on-site pump and treat system. The municipal sewer was extended near the site by others and discharge to the local POTW became a viable alternative remedy. The POTW issued the site a discharge permit for ground water and leachate collected on-site and EPA extended the sewer to the site. Based on a gas characterization study performed during the design phase, the landfill gas remedy was changed from an on-site incinerator to an enclosed flare system which can destroy the landfill gas contaminants at a lower temperature and costs significantly less. Off-site contaminated sediments in a nearby brook were to be excavated and placed under the cap. However, resampling of the sediments and a reevaluation of risk showed that the sediments did not pose an unacceptable risk and were therefore not removed. These changes in the remedies provided estimated cost savings of approximately $10.0 million.

Community Preference

Community involvement can be the basis for remedy updates and, in some cases, may mean using alternatives to the best available technology to address site contamination. For example, at the **Texarkana Wood Preserving Site in Texas**, the community was not in favor of the original remedial action (incineration). A consensus was reached with the community advisory group to use a cap for contaminated soils, which was an equally protective remedy. This remedy update lead to $3.5 million in estimated cost savings.

Another example of the effect of community preference on remedy updates, occurred at the **United Creosoting site in Texas** where EPA and the State held several community meetings, including one formal public hearing. The public was very vocal in opposition to the continuation of the innovative technology because it failed to meet the remediation rate. The costs due to time extension of the original remedy would have greatly exceeded the costs of off-site disposal. The resultant savings of the remedy update were estimated to be $21.0 million, which includes the cost of overruns with the original remedy.

Cost Increases

Although the Reform Guidance is aimed at controlling all site costs, there are remedy updates that result in cost increases, especially when data generated during remedial design demonstrates that a selected technology does not function under current conditions or additional contamination is discovered at the site. For example, at the **Silver Bow Creek/Butte Area in Montana**, in the course of preparing the design, the State and EPA reevaluated certain elements of the remedy as described in the ROD in light of new site information developed in the design process. Although this remedy update resulted in an estimated cost increase of over $50 million, an $81.0 million cash-out settlement with the PRP covered the cost increase reflected in this ESD.

Similarly, at the **Baldwin Park Operable Unit of the San Gabriel Valley Area 2 site in California**, the remedial design called for cleanup of contamination caused by volatile organic chemicals only. However, in 1997, it was discovered that in addition to volatile organic chemicals, ground water in Baldwin Park was also contaminated with other chemicals. A remedy update was necessary to address the other contaminants not identified in the original ROD. The remedy update resulted in an estimated cost increase of $38.0 million plus $6.0 million in operation and maintenance costs.

Timeframe for Completing Remedy Updates

The time needed to complete an update varies with each site. In some instances, exploring other remedies takes years of review and completion. At the **MW Manufacturing site in Pennsylvania**, on-site incineration of fluff and soil, stabilization of ash, and off-site disposal were substituted with temporary sedimentation and erosion control; treatment of fluff, sediment, and soils by *ex situ* stabilization; and treatment of non-aqueous phase liquid in soil by low temperature thermal desorption. Consequently, this remedy update required several years to complete and resulted in $26.0 million in estimated cost savings.

In contrast, the review for the remedy update at **Strother Field in Kansas** took less than one year to complete. The results of a study lead to substitution of the original remedy, a conventional pump and treat system, with a reduced pump and treat system accompanied by MNA of water. Additionally, a contingency plan for a soil excavation/capping component was implemented at the site. The update resulted in $4.0 million in estimated savings.

5.0 Conclusion

EPA and outside parties continued to consider the Updating Remedy Decisions Reform a success in both FY98 and FY99. The number of remedies updated by each Region during FY98 and FY99 clearly shows that all ten EPA Regions are implementing this Reform, with half of the Regions reporting estimated cost savings above $50 million for the two fiscal years combined. All ten EPA Regions continue to evaluate requests to review old Fund-lead remedies, as well as consider updates to more recent remedies that may not be up-to-date with current science or technology. Regions also continue to encourage outside parties to submit remedy update requests to EPA when new technical information exists to support them. Typically, EPA and outside parties share the benefits of both cost and time savings as part of implementing the updated remedy.

Interested parties should review the existing Reform Guidance (OSWER Directive 9200.2-22) for basic information concerning the Reform. Additional guidance on remedy updates is included in the updated Record of Decision Guidance (see *"A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents,"* OSWER Directive 9200.1-23P, July 1999). Specific questions on implementation of the Reform may be directed to Matt Charsky of the Office of Emergency and Remedial Response by telephone at (703) 603-8777, e-mail at **charsky.matthew@epa.gov**, or FAX at (703) 603-9133. Each Region also has a remedy update contact who can be accessed by contacting the Superfund Program area in any of EPA's ten Regional offices.

Acknowledgments

This report was made possible by the dedicated efforts of numerous EPA Superfund staff. Regional remedial project managers (RPMs) responsible for considering and implementing remedy updates at Superfund sites are to be commended for making these changes to select the best technologies available at Superfund sites nationwide.

This report was prepared for EPA under contract #68-W6-0038.

Appendix A:
SUMMARY OF UPDATED REMEDY DECISIONS FOR FY98

Region	# With No Sav.	# of TBD	# With Est. Sav.	# With Est. Incr.	Est. Savings	Est. Increases	Change Initiator						Type of Change	
							PRP	EPA	State	Fed Fac.	Public	Joint	ESD	ROD-A
1	0	1	4	0	$1.7 M	$0	1	1	0	1	0	2	4	1
2	0	1	3	1	$11.8 M	$2.0 M	2	3	0	0	0	0	4	1
3	4	0	9	1	$40.5 M	$0.03 M	5	4	0	0	0	5	10	4
4	2	0	8	2	$22.0 M	$0.03 M	2	6	0	0	0	4	9	3
5	1	1	12	1	$99.9 M	$3.1 M	3	5	1	0	0	6	9	6
6	0	0	4	0	$29.8 M	$0	1	2	0	0	1	0	1	3
7	1	0	1	0	$1.0 M	$0	2	0	0	0	0	0	1	1
8	1	1	1	2	$3.0 M	$51.3 M	2	2	1	0	0	0	5	0
9*	0	0	4	1	$51.9 M	$0.1 M	2	1	0	0	0	2	4	1
10	3	2	2	2	$20.5 M	$0.3 M	1	0	1	1	0	6	6	3
Total	**12**	**6**	**48**	**10**	**$282.1 M**	**$57.0 M**	**21**	**24**	**3**	**2**	**1**	**25**	**53**	**23**

12 6 48 10
76 sites

25 JOINT 24 EPA 21 PRP
3 STATE 2 FED FAC 1 PUBLIC
76 sites

53 ESD
23 ROD-A
76 sites

* The Selma Pressure Treating update is not counted in FY98 as it was counted in FY97. However, the estimated savings were not reported in FY97 and are being counted in FY98.

Appendix A:
SUMMARY OF UPDATED REMEDY DECISIONS FOR FY99

Region	# With No Sav.	# of TBD	# With Est. Sav.	# With Est. Incr.	Est. Savings	Est. Increases	Change Initiator						Type of Change	
							PRP	EPA	State	Fed Fac.	Public	Joint	ESD	ROD-A
1	1	2	4	0	$33.6 M	$0	1	3	0	0	1	2	6	1
2*	0	0	7	2	$103.8 M	$5.4 M	5	3	0	0	0	1	5	4
3	1	0	8	5	$92.9 M	$5.4 M	5	7	0	0	0	2	9	5
4	6	0	9	3	$11.2 M	$0.2 M	8	6	1	1	0	2	12	6
5**	0	4	9	3	$135.5 M	$3.0 M	4	5	2	0	0	5	9	7
6	0	1	1	0	$21.0 M	$0	0	2	0	0	0	0	0	2
7 †	0	0	4	0	$9.8 M	$0	3	0	1	0	0	0	1	3
8	2	0	4	0	$3.8 M	$0	1	3	0	2	0	0	5	1
9	1	0	2	1	$18.3 M	$44.0 M	1	2	0	0	0	1	3	1
10	0	1	2	0	$1.0 M	$0	2	0	0	1	0	0	2	1
Total	**11**	**8**	**50**	**14**	**$430.9M**	**$58.0M**	**30**	**31**	**4**	**4**	**1**	**13**	**52**	**31**

11 8 50 14
83 sites

31 EPA 30 PRP 13 JOINT
4 FED FAC 4 STATE 1 PUBLIC
83 sites

52 ESD
31 ROD-A
83 sites

*: Universal Oil Products (UOP), NJ had a ROD Amendment and ESD during FY99.

**: Butterworth #2, MI had two ESDs during FY99, but only one remedy update is counted because the costs cannot be split. In addition, the ESD for Fields Brook, OH was for two OUs, but is counted as one because the costs cannot be split.

†: Des Moines TCE Site, IA is not counted under any category because the update is strictly cost-related.

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 1 - FY98						
Region 1 Beacon Heights Landfill, CT	9/23/85 (1st ROD) 9/28/90 (2nd ROD) 9/9/98 (ESD)	1/98 9/98	EPA	Leachate, Soil, Air	State supports leachate transport and compensatory wetland aspects, but has not concurred with the constructed cap.	Fed = 120 hours Contr. = Unknown Est'd Savings = $700 K
	Type of Change: From - leachate treatment occurring at the Naugatuck Facility, RCRA cap with low permeability soil, and location of compensatory wetlands on the 82 acres that comprise the site; To - leachate treatment occurring at the Beacon Falls publicly-owned treatment works (POTW), an alternate capping system with geosynthetic clay liner (GCL), and location of compensatory wetlands on the Swan property.					
	Factual Basis: The pipeline to POTW is shorter, has a lower propensity for O&M problems, and disturbs the community less. The GCL is less expensive to install, eliminates high-volume truck traffic, and accelerates cleanup schedule. The Swan property is more suitable for wetlands creation.					
Region 1 Boston & Maine Wastewater Lagoons Iron Horse Park, MA OU1	9/15/88 10/1/97 (ESD)	2/97 10/97	PRP	Soil, Ground water, Surface Water, Sludge, Debris	State concurred; EPA published notice and public comment period; and EPA conducted public meeting.	Fed = 240 hours Contr. = $0 Est'd Savings = Unknown
	Type of Change: From - bioremediation, returning treated material to the lagoon area, covering it with clean soil and establishing a vegetative cover, and decontamination and disposal of piping and pumps associated with the lagoons; To - excavation, asphalt batching, and reuse.					
	Factual Basis: The results of Supplemental Feasibility Study prompted this remedy update.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 1 Loring Air Force Base Landfill 3, ME OU2	9/94 9/30/98 (ESD)	8/98 9/98	EPA, Fed. Fac.	Soil, Sediment	The community has been notified. EPA and State concurred on the remedy update.	Fed = 40 hours Contr. = $0 Est'd Savings = $800 K
	Type of Change: From - incorporate excavated contaminated soils and sediments from OU8 and OU13 as subgrade fill beneath the Landfill 3 cover system; To - construction of two cells within subgrade fill in order to use excavated contaminated soils and sediments from OU8 and OU13, while meeting the technical requirements for their disposal.					
	Factual Basis: The cells allow for the use of a greater volume of soils/sediments from the site as subgrade fill while providing a cost-effective disposal method for soils/sediments contaminated with polychlorinated bi-phenyl concentrations greater than 50 ppm.					
Region 1 Naval Construction Battalion Center, RI	9/23/93 9/29/98 (ESD)	8/98 9/98	Fed. Fac.	Soil, Debris	EPA and State concurred; community notified; fact sheet distributed.	Fed = 40 hours Contr. = $0 Est'd Savings = $15 K
	Type of Change: From - removal of contaminated soil and asphalt/concrete, and restricted future use of the area, as well as a five-year review to reassess the protectiveness of the remedy; To - removal of contaminated soil and asphalt/concrete plus no five-year review or institutional controls.					
	Factual Basis: Due to the amount of polychlorinated bi-phenyl removal that has been completed at Sites 12 and 14, soil and concrete at the sites do not pose unacceptable risks for residential reuse; thus, restriction of the area is unnecessary. The recent post-removal data indicated that the concentration levels are so low that future monitoring is also unnecessary.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 1 Tibbetts Road, NH	9/29/92 9/28/98 (ROD-A)	12/96 5/8/98	EPA, State	Ground water	State concurred; public notified and also concurred.	Fed = 320 hours Contr. = $0 Est'd Savings = $140 K
	Type of Change: From - extraction and treatment using vacuum extraction; To - bioremediation and phytoremediation.					
	Factual Basis: After two years of vacuum extraction, performance declined. Conclusion of extraction and treatment found residual concentrations above cleanup levels which are amenable to treatment with phytoremediation and bioremediation. Cleanup levels are unchanged.					
Region 1 - FY99						
Charles George Landfill, MA	9/29/88 9/30/99 (ESD)	4/1/95 9/30/99	EPA	Ground water, Landfill gas, Sediment	State and community involved in all decisions; regular town meetings to discuss site and changes to original remedy.	Fed = 240 hours Contr. = not available Est'd Savings = $ 10.8 M
	Type of Change: From - build on-site ground water pump and treatment system, landfill gas incinerator, monitor residential drinking water wells and remove approximately 500 cubic yards of sediment from a nearby brook and placed under the cap; To - extend municipal sewer and discharge to local POTW, modify gas collection system to an enclosed flare system, and decision not to remove sediments.					
	Factual Basis: 1. Discharge to sewer option become available due to extension of municipal sewer close to site and site meeting pretreatment standards of POTW. 2. Based on gas characterization, an enclosed flare gas destruction system proved to be effective treatment on it rather than more expensive incinerator option. 3. A resampling and calculation of risks associated with sediments showed that there were no unacceptable risks.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 1 Coakley Landfill, NH	6/28/90 9/30/99 (ESD)	7/15/99 9/30/99	EPA, PRP	Leachate, Ground water	State concurred; public notification, but no comments received.	Fed = 120 hours Contr. = $0 Est'd Savings = $ 14.0 M (over 10 years)
	Type of Change: From - collection and treatment of landfill leachate; To - elimination of collection and treatment of landfill leachate.					
	Factual Basis: Contaminant concentrations have decreased after the landfill cap was installed. Most cleanup levels have already been met without leachate collection and treatment.					
Region 1 Hoccomoco Pond, MA	9/85 9/21/99 (ESD)	6/99 9/21/99	PRP	Ground water	State involved in decision- making; community notified; fact sheet distributed.	Fed = 400 hours Contr. = not available Est'd Savings = $ 7.5 M (over 30 years)
	Type of Change: From - ground water pump and treat system; To - TI waiver and monitored natural attenuation.					
	Factual Basis: DNAPL was first identified during the RI/FS, and a bioassessment of the pond showed that concentration levels were decreasing due to natural processes.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 1 Kellogg-Deering Wellfield, CT	9/86 (1st ROD) 9/89 (2nd ROD) 3/31/97 (ESD)*	1/97 3/31/97	EPA	Soil, Ground water	Community notification; State concurrence.	Fed = 40 hours Contr. = $0 Est'd Savings = not available
	Type of Change: From - 1989 ROD included institutional controls to restrict use of contaminated soil and ground water. Institutional controls were established to restrict use of contaminated soil; To - EPA has determined that implementing further institutional controls to restrict use of groundwater is unnecessary.					
	Factual Basis: EPA has determined that existing state and local laws and permitting requirements related to the use of ground water are adequate and institutional tools to restrict use of ground water are unnecessary. * The remedy update was completed in FY97 but was reported in FY99.					
Region 1 Naval Construction Battalion Center, RI	9/29/97 7/21/99 (ESD)	5/98 8/99	Fed. Fac., EPA	Soil, Sediment	State concurred; community notified; fact sheet distributed.	Fed = 160 hours Contr. = $ 5 K Est'd Savings = None
	Type of Change: From - landfill cap; To - excavation and off-site disposal of PCB-contaminated soil and sediment near cap and expansion of landfill cap; plus one acre of wetland mitigation.					
	Factual Basis: PCB contamination in soil and sediment discovered above the Toxic Substances Control Act (TSCA) risk criterion outside limits of original cap.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 1 New Bedford Harbor, MA OU2	4/6/90 4/27/99 (ROD-A)	12/93 4/27/99	Public	Sediment	State and community involvement including biweekly meetings.	Fed = not available Contr. = not available Est'd Savings = not available
	Type of Change: From - on-site incineration of dredged Hot Spot sediments; To - transportation and disposal of dredged Hot Spot sediments to an off-site TSCA permitted chemical waste landfill.					
	Factual Basis: In April 1990, EPA issued the 1990 Hot Spot ROD for the Hot Spot Operable Unit of the site. Based on a vehement and Congressionally-supported reversal in community acceptance of the 1990 Hot Spot ROD's on-site incineration component of the remedy, EPA suspended plans to incinerate the Hot Spot sediments in New Bedford. Working with the local community, EPA agreed to study other options for treating the Hot Spot sediments and to amend the April 1990 Hot Spot ROD with a consensus based cleanup plan. Off-site landfilling is the consensus based cleanup plan.					
Region 1 Ottati and Goss/ Kingston Steel Drum, NH	1/16/87 9/28/99 (ESD)	6/97 9/28/99	EPA	Soil, Sediment	State concurrence and support of changes in future use; public meeting held.	Fed = 400 hours Contr. = not available Est'd Savings = $ 1.3 M
	Type of Change: From - incineration; residential clean up scenario; To - low temperature thermal desorption; industrial clean up scenario.					
	Factual Basis: The change in future use is appropriate considering the site's location on a major State highway, near existing development, and the past use of the site that was commercial/industrial. Thermal desorption is less expensive than incineration.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 2 - FY98						
Region 2 Carroll & Dubies Sewage Disposal, NY OU1	3/31/95 8/24/98 (ESD)	5/97 8/24/98	EPA	Soil, Sludge	Public comment period; official documents available for public viewing.	Fed = 105 hours Contr. = 145 hours Est'd Savings = $1.4 M
	Type of Change: From - on-site bioslurry treatment of lagoon wastes and containment; To - excavation, additional off-site waste treatment and disposal at a licensed hazardous waste facility.					
	Factual Basis: Supplemental sampling activities found that the industrial organic waste bonded together and separated from surrounding waste. Therefore the waste treatment in the ROD was not deemed practical.					
Region 2 Cosden Chemical Coatings Corporation, NJ	9/92 9/24/98 (ESD)	6/97 9/98	EPA	Soil	State concurred; public announcement.	Fed = 480 hours Contr. = 320 hours Est'd Savings = $1.2 M
	Type of Change: From - in-situ soil treatment using 500 ppm cleanup goal for lead; To - off-site treatment and/or disposal of the soil using 400 ppm cleanup goal for lead, excavation and treatment of VOC contaminated soil, and addition of soil vapor extraction system.					
	Factual Basis: Sampling performed during remedial design indicated that significantly less soil is contaminated and distributed more sporadically than previously estimated. In-situ treatment process would be more complicated and costly than anticipated and off-site treatment and/or disposal, supported by the community, is preferable.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 2 Ramapo Landfill, NY	3/31/92 11/26/97 (ESD)	Not Applicable 11/26/97	PRP	Sludge, Debris, Liquid Waste	Public comments invited; State supported ESD.	Fed = 80 hours Contr. = Unknown Est'd Savings = Unknown
	Type of Change: From - landfill cap with impermeable barrier only on top (flat) portion; To - landfill cover with an impermeable barrier on top and side slopes.					
	Factual Basis: As a result of studies called for in the ROD, it was determined that an impermeable barrier on the side slopes would be more cost-effective and protective than the original cap design.					
Region 2 Reynolds Metals Company Study Area, NY	9/27/93 9/30/98 (ROD-A)	1995 9/98	PRP	Sediments	Public meeting with community and Mohawk Tribe. Community supports landfill remedy, but Tribe only supports a temporary landfill. State concurred on proposed plan.	Fed = 200 hours Contr. = 40 hours Est'd Savings = $9.2 M
	Type of Change: From - dredging and dewatering of sediments with polychlorinated biphenyl (PCB) levels exceeding 1 ppm, polycyclic aromatic hydrocarbon (PAH) levels exceeding 10 ppm, and total dibenzofuran (TDBF) levels exceeding 1 ppb together with on-site treatment of sediments by thermal desorption for PCBs at levels above 25 ppm and on-site landfill of PCBs at levels less than 25 ppm; To - eliminate on-site thermal desorption treatment and dispose of sediment with PCBs at levels between 50 and 500 ppm; off-site treatment of sediments with PCBs at levels greater than 500 ppm, and on-site landfill and cap of sediments with PCBs at levels less than 50 ppm.					
	Factual Basis: New information in design on lower cost of off-site disposal and the presence of a substantially larger volume of contaminated sediments.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 2 - FY99						
Region 2 Batavia Landfill	6/6/95 9/20/99 (ESD)	7/15/99 9/20/99	PRP	Soil	Public notice.	Fed = 40 hours Contr. = $0 Est'd Savings = $ 770.5 K
	Type of Change: From - hot spot consolidation and cap; To - large area consolidation and cap.					
	Factual Basis: Change in conditions discovered in RD.					
Region 2 Forest Glen Mobile Home Subdivision, NY	3/31/98 9/30/99 (ROD-A)	4/16/99 9/30/99	City, PRP	Soil	Public meeting held.	Fed = 40 hours Contr. = $0 Est'd Savings = $ 3.9 M
	Type of Change: From - consolidate and cap; To - cap in place.					
	Factual Basis: Land use changed from residential to commercial/ industrial.					
Region 2 General Electric (GE) Wiring Devices, PR	9/30/88 4/26/99 (ESD)	5/98 4/26/99	EPA	Soil	Full Territory involvement; community supportive	Fed = 40 hours Contr. = $50 K Est'd Savings = $5.4 M
	Type of Change: From - on-site hydro-metallurgical treatment; To - off-site disposal.					
	Factual Basis: PRP proposed cost-saving alternative that afforded same level of environmental protection.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region **Site Name, State**	**Date of** **Original ROD** **Date of Change** **(ESD/ROD-A)**	**Date Review** **Commenced** **Date Review** **Completed**	**Change Initiator**	**Media**	**State/Community Involvement**	**Est'd Resource Demands -** **Fed/Contr.** **Est'd Cost Savings**
Region 2 General Motors (GM), NY	12/17/90 3/23/99 (ROD-A)	6/98 3/23/99	EPA	Soil, Sediment	Extensive Tribal, State, and community involvement.	Fed = 300 hours* Contr. = 50 hours Est'd Savings = $ 3.8 M (Reduction in cleanup costs)
	Type of Change: From - on-site treatment for sediments and soils from the Raquette and St. Lawrence River and GM site soils excavated during the installation of ground water controls; To - off-site disposal.					
	Factual Basis: ROD amendment on only a portion of the site was developed primarily to gain community acceptance and further the cleanup, which had been halted due to Tribal community opposition. * Received many conflicting public comments and needed to develop an extensive responsiveness summary.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 2 Universal Oil Products (UOP), NJ	9/30/93 12/8/98 (ROD-A) 4/29/99 (ESD)	1997 12/98 4/99	PRP	Soil	State and community supported changes to the remedy.	ROD-A Fed = 120 hours Contr. = $0 Est'd Savings = $ 1.2 M ESD Fed = 40 hours Contr. = $0 Est'd Savings = $ 1.1 M
	Type of Change: ROD-A : From - Low Temperature Thermal Desorption (LTTD) of PCB/PAH contaminated soils; To - off-site disposal. ESD : From - LTTD of VOC contaminated soils; To- on-site thermally enhanced vapor extraction.					
	Factual Basis: In both the amendment and ESD, the on-site treatment using LTTD was halted in 1997 after operational problems and odor complaints from neighbors. Remedy changes were necessary to complete the remedy aside from bringing LTTD back on site.					
Region 2 Woodlands, NJ Route 72 Route 532	5/16/90 7/1/99 (ROD-A)	12/93 7/1/99	PRP	Ground water	State supported the change. The site is located in a rural area and the local population supports the remedy change.	Fed = 150 hours Contr. = $0 Est'd Savings = $ 87.6 M
	Type of Change: From - ground water pump and treat; To - air sparging/soil vapor extraction and natural attenuation.					
	Factual Basis: BTAG memo indicated that the ground water pump and treat system would dewater the nearby wetlands. In addition, during remedial design, the PRP successfully identified alternatives that would meet ROD objectives at much lower cost.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 3 - FY98						
Region 3 Arrowhead Plating, VA	9/30/91 9/15/98 (ESD)	12/97 9/98	PRP	Ground water	State supported the remedy modification.	Fed = 250 hrs. Contr. = $0 Est'd Savings = $650 K
	Type of Change: From - ground water pump and treat using air stripping and carbon adsorption; To - Permeable Reactive Subsurface Barriers (PRSBs).					
	Factual Basis: Treatability study results and advances in the development of PRSBs and in-situ ground water treatment technology indicate that PRSBs are a more appropriate means of treating ground water at the site.					
Region 3 Brown's Battery Breaking, PA OU2	7/2/92 12/19/97 (ESD)	8/97 12/97	EPA, State	Ground water, Soil	State concurred with the ESD; public comment period was held.	Fed = 252 hrs. Contr. = $0 Est'd Savings = $0
	Type of Change: From - cleanup of ground water contamination in shallow and deep aquifers to background levels; To - cleanup to State standards.					
	Factual Basis: EPA accepts State's new cleanup standard for lead in ground water issued in State-wide, health-based remediation standards.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 3 CryoChem, Inc., PA OU3	9/30/91 9/22/98 (ESD)	5/96 9/98	EPA	Soil	State concurred.	Fed = 235 hrs. Contr. = $0 Est'd Savings = $100 K
	Type of Change: From - utilization of soil vapor extraction to remove the contamination from the soil; To - no further action.					
	Factual Basis: Soil sampling in 1992 and 1995 revealed that contaminant levels were significantly below the operating norm for a vapor extraction system, thus no longer posing a threat to human health, welfare, and the environment.					
Region 3 Dover Gas Light Co., DE	8/16/94 12/16/97 (ROD-A)	7/95 12/97	PRP	Soil, Ground water	Several public meetings were held; public had comments on amended FS and proposed plan; State concurred on proposed plan.	Fed = 90 hours Contr. = $0 Est'd Savings = $9.0 M
	Type of Change: From - excavating soils at former gas plant for off-site incineration; To - excavation and off-site thermal destruction of soil inside the buried bottoms of former gas holders; soil vapor extraction outside gas holders; pave other areas and limit development.					
	Factual Basis: The soil cleanup was modified to take into account restricted future land use.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 3 Hunterstown Road, PA	8/2/93 8/25/98 (ESD)	7/98 8/25/98	EPA, State	Ground water	State concurred; Administrative Record is available for public review.	Fed = 40 hrs. Contr. = $0 Est'd Savings = $0
	Type of Change: Procedural change: From - determination of "engineering feasibility" of remedial goals after remedial action; To - determination of "engineering feasibility" of remediation goals prior to remedial action.					
	Factual Basis: EPA found that it may be possible to determine a remediation goal based on hydrogeologic investigation conducted during the pre-design phase of ground water pump and treat remedial design.					
Region 3 MW Manufacturing Site, PA OU5 (formerly OU2)	6/90 12/22/97 (ROD-A)	12/92 12/97	PRP	Soil, Fluff, Sediments, Lagoons, Debris	State and community concurred on amendment; community concerns were answered in responsiveness summary.	Fed = 150 hours Contr. = $0 Est'd Savings = $26.0 M
	Type of Change: From - on-site incineration of fluff with off-site disposal; incineration of soil, stabilization of ash and off-site disposal; To - temporary sedimentation and erosion control; treatment of fluff, sediment and soils by *ex situ* stabilization; treatment of non-aqueous phase liquid in soil by low temperature thermal desorption.					
	Factual Basis: New Information was obtained from supplemental site characterization, a focused feasibility study, and treatability study results.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 3 NCR Corporation, DE	8/12/91 3/96 (1st ESD) 9/29/98 (2nd ESD)	4/98 9/98	PRP	Ground water	State supports the remedy change.	Fed = 245 hrs. Contr. = $0 Est'd Savings = $2.5 M
	Type of Change: From - ground water pump and treat (P&T) system; To - enhanced P&T with air sparging/soil vapor extraction system.					
	Factual Basis: The use of air sparging/soil vapor extraction for the down gradient portion of the aquifer has been successful in reducing the concentration of TCE. Augmentation of the existing pump and treat system with an air sparging/soil vapor extraction system lowers the cost of the remedy and speeds the process of cleanup.					
Region 3 North Penn Area 1, PA	9/30/94 10/29/97 (ESD)	11/95 10/97	EPA, State	Ground water	State concurred.	Fed = 250 hrs. Contr. = $0 Est'd Savings = $125 K
	Type of Change: From - ground water treatment with air stripper, cleanup to background levels, and pump and treat entire S-9 well; To - ground water discharge to publicly-owned treatment works (POTW), cleanup to maximum contaminant levels, and no pumping of S-9 well.					
	Factual Basis: Sampling results from remedial design activities revealed low levels of contamination which can be handled by the POTW. Pennsylvania's remediation standards have also recently changed.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 3 North Penn Area 1, PA	9/30/94 9/24/98 (ESD)	1/98 9/98	EPA	Ground water	State verbally concurred with the ESD.	Fed = 250 hrs Contr. = $0 Est'd Savings = $125 K
	Type of Change: From - interim remedy of discharge to publicly-owned treatment works selected for OU2 ground water; To - final remedy for contaminated ground water.					
	Factual Basis: Monitoring of newly installed wells revealed that the levels of contamination were low with no evidence of the presence of dense non-aqueous phase liquids. Source of ground water contamination was removed and levels of contaminated soil are not expected to increase.					
Region 3 Osborne Landfill (ROD 1), PA	9/28/90 8/24/98 (ESD)	3/98 8/24/98	EPA, State	Ground water	State concurred; Administrative Record is available for public review.	Fed = 250 hrs. Contr. = $0 Est'd Savings = $0
	Type of Change: From - institutional controls to help reduce site exposure; To - removal of institutional controls.					
	Factual Basis: EPA no longer considers the institutional control on any new wells within one-half mile of the site to be necessary. The plume is almost completely limited to lot 203, which contains the landfill. Homes near the plume have access to public water supply. Leachate treatment system in operation since 1996.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 3 Osborne Landfill (ROD 2), PA	12/30/97 8/24/98 (ESD)	1/98 8/24/98	EPA	Ground water	State concurred; Administrative Record is available for public review.	Fed = 250 hrs. Contr. = $0 Est'd. Savings = $0
	Type of Change: From - well monitoring (natural attenuation with monitoring); To - removal of two wells from the monitoring network.					
	Factual Basis: Two wells were abandoned due to interference with construction of slurry wall and clay cap. Performance wells are close to these abandoned wells; therefore, the removal of the wells does not significantly reduce the scope of the monitoring program.					
Region 3 Westinghouse Elevator Co. Plant, PA OU1	6/30/92 8/3/98 (ESD)	10/95 8/3/98	EPA, PRP	Ground water, Air	State concurred; Administrative Record is available for public review.	Fed = 250 hrs. Contr. = $0 Est'd. Savings = $500 K
	Type of Change: From - construction of off-site ground water extraction system connected to an on-site air stripper; To - continued use of the off-Plant treatment system.					
	Factual Basis: During design, EPA believed it would be simpler and cheaper to pump the ground water extracted off-Plant to an air stripper located on the Plant property.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 3 Whitmoyer Laboratories Site, PA OU2	12/17/90 5/12/98 (ROD-A)	11/94 5/98	PRP	Soils, Lagoons, Debris	State concurred with amendment; community had concerns with on-site incineration.	Fed = 537 hours Contr. = $0 Est'd Savings = $1.5 M
	Type of Change: From - on-site incineration and off-site disposal; To - off-site stabilization of arsenic-contaminated soil and disposal to Subtitle C landfill.					
	Factual Basis: Community opposition to on-site incineration and full scale pilot test of stabilization exceeds treatment level of 90 percent efficiency, which is required for a treatability variance.					
Region 3 - FY99						
Region 3 Butz Landfill, PA	6/30/92 8/27/99 (ESD)	3/31/99 8/27/99	EPA	Ground water	State concurrence; ESD available for public review.	Fed = 150 hours Contr. = not available Est'd Savings = $ 9.5 M
	Type of Change: From - ground water extraction wells at the perimeter of the area of contamination; To - elimination of the ground water extraction wells; use of maximum contaminant levels (MCLs) or new applicable state standards for cleanup of contaminants; and natural attenuation of contaminants at the down-gradient perimeter of contaminated ground water.					
	Factual Basis: Changes to the remedy occurred as a result of a change in Pennsylvania law; new information relating to the natural attenuation of contaminants; and additional site-specific information gained as a result of the remedial design activities at the site.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 3 Chem-Solv, Inc., DE	3/29/92 6/18/99 (ESD)	12/98 6/18/99	EPA	Ground water	State concurrence; administrative record available for public review.	Fed = 50 hours Contr. = not available Est'd Savings = None
	Type of Change: From - establishment of State Ground Water Management Zone (GWMZ) and placement of notice in property records of all properties located within the GWMZ; and removal of existing recovery wells onsite. To - no notice necessary to alert prospective purchasers of property within the GWMZ; it was also deemed unnecessary to record notices in property records.					
	Factual Basis: Notices in property records are often impractical to record and such notices would remain permanently in the property records, potentially stigmatizing the property.					
Region 3 Douglassville Disposal, PA OU 2	6/89 8/31/99 (ROD-A)	9/97 8/31/99	PRP	Soil	Community Relations Plan was developed for the site; Administrative Record available for public review; public meeting was held.	Fed = 3,000 hours* Contr. = $0 Est'd Savings = $ 36.0 M
	Type of Change: From - on-site thermal treatment (incineration) of oily diatomaceous earth filter cake wastes and oily sediments in the drainageway; To - remediation of filter cake wastes and oily sediments using a lime-based stabilization process.					
	Factual Basis: Stabilization was not chosen in the original ROD primarily because the processes available at the time were not deemed to be suitable for materials that contained greater than 10% organics. EPA believes that certain forms of waste stabilization are, today, protective and cost-effective for the type of waste under consideration at the site. The stabilization alternative would immobilize the major portion of the hazardous constituents of waste. * Although review began in FY97 and ended in FY99, the concerned parties were looking at a possible remedy change for at least three years, perhaps as many as six. Much time was spent gathering and processing the site information to defend the remedy change. Numerous meetings were held to discuss the most recent site information.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 3 H&H Burn Pit, VA	6/30/95 9/28/99 (ESD)	2/28/99 9/28/99	PRP	Ground water	Administrative Record available for public review.	Fed = 80 hours Contr. = 30 hours Est'd Savings = $ 2.2 M
	Type of Change: From - pump and treat system using precipitation, sedimentation, and ultra-violet oxidation; To - construction of a soil vapor extraction system.					
	Factual Basis: The modification of the ground water remedy will achieve the ground water remedial objectives more quickly and cost-effectively than the ground water pump and treat system outlined in the original ROD.					
Region 3 Ordnance Works, WV OU 1	3/88 (1st ROD) 9/29/89 (2nd ROD) 9/30/99 (re-ROD)	6/7/99 9/30/99	PRP	Soil, Sediments, Lagoon Wastes, Air	Administrative Record available for public review.	Fed = 300 hours Contr. = not available Est'd Savings = $ 1.6 M
	Type of Change: From - excavation and treatment of inorganic hot spots from the lagoon and scraped areas; disposal of treated inorganic contaminants at the former landfill area; capping the former landfill area; and excavation and treatment of organics-contaminated soils and sediments using bioremediation; To - off-site treatment of visibly stained stream, lagoon, and scraped area soil/sediments; consolidation of contaminated media into existing landfill; capping of existing landfill; long-term monitoring and institutional controls. The new ROD supercedes the 2nd ROD of 9/29/89 at OU1.					
	Factual Basis: New information provided in the focused feasibility study changed the scope of the original remedy.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 3 Whitmoyer Labs, PA OU3	10/31/90 9/30/99 (ROD-A)	12/98 9/30/99	PRP	Soil, Ground water	State concurrence; community concerns addressed at public meeting; public comment period; negotiations between property members and PRPs currently on-going.	Fed = 150 hours Contr. = 0 hours Est'd Savings = $ 17.5 M
	Type of Change: From - treatment of organically contaminated soils via on-site bioremediation; To - off-site treatment of organically contaminated soils by low-temperature thermal desorption.					
	Factual Basis: The thickness of the saturated zone makes it very difficult to maintain structural stability in the excavation areas due to the presence of water; the large volumes of soil to be excavated would be difficult to manage and place on-site.					
Region 3 Whitmoyer Labs, PA OU 2 OU 3	12/17/90 (OU 2) 11/16/98 (ESD) 12/31/90 (OU 3) 11/16/98 (ESD)	2/10/98(OU 2) 11/16/98 2/10/98(OU 3) 11/16/98	PRP	Soils, Lagoon wastes	State and community concurred.	Fed = 132 hours Contr. = 0 hours Est'd Savings = $4.2 M
	Type of Change: From - on-site treatment and off-site disposal; To - off-site treatment and off-site disposal.					
	Factual Basis: Detailed delineation of the lagoons and soils resulted in reduced volumes requiring treatment; completion of treatability tests demonstrated that the lagoon wastes and highly contaminated soils could be successfully treated off-site; and passage of the Phase IV Land Disposal Restrictions which provide for an alternate treatment criterion for soils.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 3 William Dick Lagoons, PA	6/28/91 (1st ROD) 3/31/93 (2nd ROD) 2/3/99 (ESD)	7/97 2/3/99	EPA	Soil, Ground water	Administrative Record available for public review.	Fed = 400 hours Contr. = not available Est'd Savings = $ 4.3 M
	Type of Change: From - (original ROD) extension of the existing water supply to homes impacted by the Site; and hydro-geological study and an interim ground water pump and treat system; and deference of soil remediation until completion of treatability study and focused feasibility study; (ROD II) additional soil sampling; excavation and treatment (thermal desorption unit) of contaminated soil; treatment of air emissions from thermal desorption unit; management/ off-site disposal of treatment residuals and wastewater; backfilling treated soils and either vegetative or multi-layer cap over such areas (and O&M of cap); deed restrictions; and five year remedy review; To - include a CAMU to facilitate the remedy outlined in ROD II (not requiring the construction of an on-site hazardous waste landfill).					
	Factual Basis: The remedy proposed in ROD II anticipated a RCRA delisting be processed to allow treated material to be placed back into the excavated areas if all cleanup standards are not met.					
Region 3 Woodlawn Landfill, MD	9/28/93 9/30/99 (ROD-A)	3/24/99 9/30/99	EPA	Ground water	Public meeting; notification; and comment period.	Fed = 150 hours Contr. = $0 Est'd Savings = $ 17.6 M
	Type of Change: From - capping of landfill with low permeability cap; excavation and disposal of mercury contaminated surface soil; and extraction and on-site treatment of contaminated ground water with discharge of treated ground water to the on-site stream; To - vegetative soil cover placed over landfilled wastes; monitored natural attenuation of ground water.					
	Factual Basis: It was determined through ground water monitoring that the concentrations of the organic contaminants were decreasing more rapidly than expected. It was determined that naturally occurring processes are effectively degrading the organic compounds.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 4 - FY98						
Region 4 Cedartown Municipal Landfill Site, GA	11/2/93 5/11/98 (ROD-A)	12/8/97 2/28/98	EPA	Leachate, Ground water	State concurred on and community supports ROD amendment.	Fed = 35 hours Contr.= $0 Est'd Savings = $8.6 M
	Type of Change: From - pump and treat ground water; To - deletion of ground water pump and treat remedy.					
	Factual Basis: Analysis of 2.5 years of ground water data during remedial design indicated that contamination was not migrating off-site and that some constituents may be from natural sources.					
Region 4 GE/Shepard Farm, NC	9/29/95 9/30/98 (ESD)	12/97 9/98	EPA, PRP, State	Soil	State involved; no community involvement	Fed = 40 hours Contr. = $0 Est'd Savings = $0
	Type of Change: From - on-site capping of two landfills and a dry sludge impediment (DSF); To - excavate landfill and place a much larger DSF and then cap.					
	Factual Basis: PRP will maintain one cap instead of three.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 4 Geiger (C&M Oil), SC	6/1/87 7/13/96 (1st ROD-A) 9/9/98 (2nd ROD-A)	3/98 6/98	EPA	Ground water	State concurred; property owner concurred; no comments on proposed plan.	Fed = 30 hours Contr. = $0 Est'd Savings = $1.3 M
	Type of Change: From - pump and treat; To - monitored natural attenuation.					
	Factual Basis: Most of the wells that previously showed contamination (VOCs & metals) no longer show contaminants. Only 2 out of 27 wells have any contaminants, one of which is near drinking water standards.					
Region 4 Hercules 009 Landfill, GA	3/25/93 8/14/98 (ESD)	7/8/98 8/17/98	EPA	Sludge, Soil	State concurred; fact sheet distributed to the public; and community received copies of ESD.	Fed = 20 hours Contr. = $0 Est'd Savings = $400 K
	Type of Change: From - in-situ stabilization and cap designed to use imported soil/clay; To - in-situ stabilization and cap designed to use treated soil.					
	Factual Basis: New information discovered during remedial design showed new cap design was more cost effective and utilized on-site materials.					
Region 4 Marzone Inc./Chevron Chemical Co., GA OU1	9/30/94 6/19/98 (ESD)	5/1/98 6/1/98	PRP	Soil, Sediment	State received draft; copies of ESD sent to community.	Fed = 20 hours Contr. = $0 Est'd Savings = $0
	Type of Change: From - original boundary; To - extended boundary of OU1 along a railroad drainage ditch.					
	Factual Basis: The ditch, which had previously been defined as a portion of OU2, could be remedied cost-effectively and timely under the OU1 action.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 4 MCAS Cherry Point, NC	10/19/96 9/98 (ESD)	11/97 9/98	EPA, State, Federal Facility	Ground water	State concurred, and Federal facility developed and distributed a fact sheet for community.	Fed = 60 hours Contr. = $0 Est'd Savings = $1.0 M
	Type of Change: From - use of extraction wells; To - expanded extraction system to treat all areas within OU1 above 1ppm VOCs; consolidated treatment plant with currently operating IWTP (Industrial Waste Treatment Plant).					
	Factual Basis: ROD specified the number of extraction wells which changed in RD/RA implementation; Consolidary Treatment System with IWTP could substantially decrease costs.					
Region 4 Sapp Battery, FL	9/26/86 7/98 (ESD)	5/98 7/98	EPA	Soil	EPA issued ESD fact sheet; conducted availability session in July 1998.	Fed = 20 hours Contr. = $0 Est'd Savings = $200 K
	Type of Change: From - off-site relocation of soil to landfill; To - on-site handling of solidified/stabilized soil.					
	Factual Basis: Level of treatment of soil is reduced; no change in volume.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 4 Whitehouse Waste Oil Pits, FL	5/30/85 6/16/92 (1st ROD-A) 9/24/98 (2nd ROD-A)	1/6/95 9/24/98	PRP	Sludge, Soil, Ground water, Sediment	Active State involvement. EPA held public meeting; public comment period with no written comments.	Fed = 500 hours Contr. = $0 Est'd Savings = $10.45 M
	Type of Change: From - combination of soil washing, biological treatment, and solidification/stabilization (S/S) for soil; pump and treat of ground water; To - S/S and containment for soil; containment for ground water through a vertical barrier and lime curtain.					
	Factual Basis: Treatability studies showed biological treatment and S/S would not address problem for soil. Treatment would be too costly and increase waste volume substantially for ground water.					
Region 4 Wrigley Charcoal Plant, TN	9/30/91 10/97 (ESD)	1/97 10/97	EPA, State	Debris, Sludge, Soil	A fact sheet was provided to the public.	Fed = 20 hours Contr. = $0 Est'd. Savings = $5 K
	Type of Change: From - soil stabilization and backfill with clean fill, debris removal, off-site disposal and future monitoring; To - complete removal of all waste material, off-site disposal and stabilization; monitoring is no longer necessary because the soil has been replaced.					
	Factual Basis: New information was discovered during the initial RI/FS.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 4 Yellow Water Road Dump, FL	6/30/92 4/6/98 (ESD)	1/98 3/98	EPA	Ground water	State reviewed and concurred; EPA issued fact sheet with comment period.	Fed = 10 hours Contr. = $0 Est'd Savings = $75 K
	Type of Change: From - long-term ground water monitoring; To - elimination of long-term ground water monitoring.					
	Factual Basis: The site met ground water standards.					
Region 4 - FY99						
Region 4 American Creosote Works, FL	9/28/89 5/21/99 (ROD-A)	7/92 5/21/99	EPA	Debris, Soil, Sediment, Sludge, Surface Water	Active State involvement; community provided extensive comments on alternatives and on sampling program. EPA addressed both issues.	Fed = 500 hours Contr. = $0 Est'd Savings = $ 1.6 M
	Type of Change: From - biological treatment of about 24,000 cubic yards of surface soil; To - containment of 100,000 cubic yards of soil, solidified sludge, and sediment.					
	Factual Basis: The scope of the remedy has increased from 24,000 cubic yards to 100,000 cubic yards because of a restructuring of operable units. The change is necessary because treatability studies of biological treatment indicated that adequate reduction of contaminants of concern could not be achieved.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 4 Anodyne, Inc. FL	6/17/93 7/1/99 (ESD)	5/1/99 7/1/99	EPA	Soil	State review of ESD; community fact sheet sent out to mailing list.	Fed = 50 hours Contr. = $0 Est'd Savings = None
	Type of Change: From - soil excavation performance standard of 0 mg/kg for nickel; To - soil excavation performance standard of 4 mg/kg for nickel.					
	Factual Basis: Due to detection limits of the laboratory analytical equipment, it is difficult to reliably determine a 0 mg/kg concentration.					
Region 4 Fort Hartford Stone Quarry Site, KY	3/95 7/99 (ESD)	6/99 7/99	PRP	Air	State reviewed ESD; public comment period.	Fed = 200 hours Contr. = $0 Est'd Savings = $100 K
	Type of Change: From - portal doors to close mine entrances, dispersion stacks to release mine air at night; To - no need for portal doors and force ventilation of mine air.					
	Factual Basis: Air monitoring showed that ammonia concentration was below set threshold limits.					
Region 4 Helena Chemical, SC	9/8/93 2/11/99 (ROD-A)	8/1/98 2/11/99	EPA	Soil	State concurrence; public meeting; fact sheet mailings.	Fed = 45 hours Contr. = not available Est'd Savings = $ 1.1 M
	Type of Change: From -soil incineration only; To - combination of incineration and landfilling of soils depending on concentration of contaminants.					
	Factual Basis: Cost was the primary factor influencing ROD amendment.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 4 JFD Electronics/ Channel Master, NC	9/20/92 5/4/99 (ROD-A)	2/98 5/4/99	PRP	Sludge	State concurrence; EPA convened public meeting and received no comments.	Fed = 160 hours Contr. = $0 Est'd Savings = $ 2.5 M
	Type of Change: From - excavation and on-site treatment of sludge with alkaline chlorination and stabilization, and on-site disposal; To - off-site treatment and disposal.					
	Factual Basis: Remediation levels could not be attained for cyanide using alkaline chlorination. Implementability and comparable cost estimates for off-site treatment and disposal outweigh preference for on-site treatment/disposal. Note: The stated cost in the ROD is estimated at $1.5 million. A mini FS performed by the PRP in 1999 estimated that the remedy in the ROD would actually cost around $5 million. The remedy stated in the ROD Amendment is estimated to cost about $2.5 million. Therefore, the cost savings are approximately $2.5 million.					
Region 4 Lexington County Landfill, SC	9/29/94 5/14/99 (ROD-A)	10/31/98 5/14/99	EPA	Soil	State concurrence; public meeting; fact sheet mailings.	Fed = 60 hours Contr. = not available Est'd Savings = $ 3.5 M
	Type of Change: From -excavation/on-site containment; To - in place/on-site containment.					
	Factual Basis: Cost and short-term effectiveness were primary influencing factors for ROD amendment.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 4 Martin Marietta, Soydeco, Inc., NC	9/87 10/29/98 (ESD)	8/98 10/29/98	PRP	Soil	State reviewed and concurred; no comment period.	Fed = 85 hours Contr. = $0 Est'd Savings = None
	Type of Change: From - in-situ treatment of stockpiled soils; To - off-site treatment and disposal.					
	Factual Basis: The previous treatment technology did not work. The soils were included in the treatment method of soils from another area of the site, that was selected in the original ROD and modified by a 1994 ESD.					
Region 4 NAS Cecil Field, FL Site 16 OU7	9/16/96 5/12/99 (ROD-A)	9/98 5/12/99	EPA	Ground water	State and community involved	Fed = 24 hours Contr. = $0 Est'd Savings = $ 1.4 M
	Type of Change: From - pump & treat with discharge to Federal Waste Water Treatment Plant (FWWTP); enhance bioremediation; To - air sparging in source area; natural attenuation down gradient; storm sewer repair; institutional controls.					
	Factual Basis: The base is closing, the FWWTP would no longer be available to receive discharges, and a pilot study indicated that air sparging was feasible. Sampling has shown that enhanced bioremediation was not necessary. Portions of the storm sewer are being replaced because of ground water discharge in the storm sewer.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 4 NAS Pensacola, FL Site 1 OU1 (Inactive Sanitary Landfill)	9/25/98 9/28/99 (ESD)	2/1/99 4/99	Navy	Ground water	State concurrence; community involvement.	Fed = 20 hours Contr. = $0 Est'd Savings = $ 800 K
	Type of Change: From - extraction of ground water, followed by treatment and discharge into wetland 3; To - ground water discharge directly to the wastewater treatment system on the base.					
	Factual Basis: The treatment plant could not handle incremental loading of iron sludge, as it would violate the allowable discharge rate. However, the plant can accept a steady stream of the waste and has the capability to treat it.					
Region 4 National Starch, NC OU3	10/7/93 11/4/98 (ESD)	10/7/98 11/14/98	PRP	Ground water	State concurred with the ESD.	Fed = None Contr. = None Est'd Savings = None
	Type of Change: From - changed part of OU3 ground water extraction system from extraction wells (2 wells); To - collection trench (approximately 80 feet in length).					
	Factual Basis: Ground water modeling conducted by PRP's contractor indicated a trench would be a more efficient means of extracting ground water out of a portion of the site.					
Region 4 NC State, NC	9/30/96 7/21/99 (ESD)	5/99 7/21/99	PRP	Soil	State concurrence.	Fed = 30 hours Contr. = $0 Est'd Savings = None
	Type of Change: From - using in-situ augers for the Solidification/Stabilization (S/S); To - using a trackhoe for the S/S.					
	Factual Basis: The remedy was changed because subsurface conditions were incompatible with the auger method.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 4 Sapp Battery, FL	9/26/86 8/31/99 (ESD)	6/99 8/31/99	PRP	Soil	State informed of change; no comment period.	Fed = 50 hours Contr. = $0 Est'd Savings = $ 50 K
	Type of Change: From - treating plastic battery casings onsite with impacted soils; To - transporting plastic casings to an off-site facility for recycling.					
	Factual Basis: Plastic casings are difficult to grind and interfere with the achievement of performance standards when mixed with soil and solidified/stabilized.					
Region 4 Stauffer Chemical Co., FL	7/8/98 6/15/99 (ESD)	5/28/99 6/15/99	PRP, Public	Soil	State reviewed ESD; no public comment period.	Fed = 120 hours Contr. = $0 Est'd Savings = None
	Type of Change: From - ROD identified arsenic as a contaminant of concern but did not specify a cleanup goal; To- specific cleanup goal for arsenic.					
	Factual Basis: Arsenic was not given a cleanup goal at the time of the original ROD since it was co-mingled with other contaminants. However, the PRP and public requested a cleanup goal be specified after viewing signed ROD.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 4 Stauffer Chemical (Cold Creek Plant), AL OU 2	8/16/95 6/28/99 (ESD)	6/8/98 6/28/99	PRP	Soil	State reviewed draft ESD; public notice in paper.	Fed = 200 hours Contr. = $0 Est'd Savings = $ 195 K
	Type of Change: From - One hundred percent on-site ex-situ bioremediation of contaminated soil in a closed impoundment; To - Nine percent of the most contaminated soil being shipped off site for disposal and remaining 91% being bioremediated on-site.					
	Factual Basis: Remedial design treatability study determined that bioremediation of 100% of the soil would take significantly longer that had been estimated at the time the ROD was signed. Shipping the most contaminated soil off-site for disposal will significantly reduce the treatment time for the remaining soils.					
Region 4 Stauffer Chemical Co., FL	7/8/98 8/16/99 (ESD)	7/15/99 8/16/99	PRP	Soil	State review; no public comment period.	Fed = 80 hours Contr. = $0 Est'd Savings = None
	Type of Change: From - beryllium remedial cleanup goal of 0.192 ppm; cap criteria according to Florida Code Sect. 62-701.050; Petroleum contamination assessment in vicinity of two former aboveground tanks regulated by the Florida Department of Environmental Protection (FDEP); performance standards for in-situ solidification/stabilization mixture: compressive strength (100 psi), permeability (10^{-6} cm/sec); To - beryllium remedial cleanup goal of 120 ppm; cap criteria according to Florida Code Sect. 62-701.600.5(g); no contamination assessment around former tanks, include assessment of suspected petroleum product found in on-site monitoring well under direction of FDEP; performance standards changed to 50 psi, 10^{-5} cm/sec respectively.					
	Factual Basis: The change in ARAR prior to signing of ROD, raising cleanup standard from 0.192 ppm to 120 ppm; change in Florida code (original citation no longer exists); tank site investigation completed prior to signing of ROD; well product assessment still needed; new performance data showed original requirements to result in construction problems.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 5 - FY98						
Region 5 Acme Solvents, IL	9/85 1/98 (ESD)	Unknown 1/98	PRP	Hazardous Waste	State concurred; no community response.	Fed = Unknown Contr. = Unknown Est'd Savings = Unknown
	Type of Change: From - excavation and capping; To - delisting wastes and recalculating cleanup standard for RCRA cap.					
	Factual Basis: New information was discovered over time.					
Region 5 Allied Chemical/Ironton Coke Plant, OH	12/28/90 7/30/95 (1st ROD-A) 9/4/97 (2nd ROD-A) 9/30/98 (3rd ROD-A)	12/1/97 9/30/98	PRP	Lagoon waste, Soil, Ground water	State concurred; minimal community response was supportive.	Fed = 550 hours Contr. = $0 Est'd Savings = $50.0 M
	Type of Change: From - for lagoons 1 - 4, soils in-situ bioremediation; for lagoon soils 5, incineration; To- lagoon soils 1 - 4, hot spot excavation and wetland development; for lagoon soils 5, recycling, treatment, and/or disposal of the KO87 listed waste in an approved off-site hazardous waste facility and the use of the remaining material, excluding debris, as an alternative fuel.					
	Factual Basis: The changes were a result of the discovery of new information during the Remedial Design/Remedial Action.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 5 Galen Myers Dump/ Drum Salvage Site, IN	9/29/95 9/30/98 (ESD)	4/97 9/30/98	State, EPA	Soil	Official documents available for public viewing.	Fed = Unknown Contr. = Unknown Est'd Savings = $164 K
	Type of Change: From - soil excavation; To - removal of soil excavation from remedy.					
	Factual Basis: The sampling conducted during the RD (Remedial Design) indicates that the volume of soils from the test pit area exceeding the soil PRG (preliminary remediation goal) has decreased significantly. Sampling shows no soils in excess of the PRG in the area.					
Region 5 Kohler Company Landfill, WI	3/92 (soil) 6/96 (GW) 9/29/98 (ESD)	9/27/98 9/30/98	EPA	Ground water, Soil	State agrees with the modifications made by EPA.	Fed = 9 hours Contr. = $0 Est'd Savings = $0
	Type of Change: From - multi-layer cap constructed in phases over the landfill; To - capped remaining landfill area with a low-permeability clay cover system.					
	Factual Basis: The remaining landfill area is capped consistent with the existing license requirements and subject to State closure laws.					
Region 5 Moss-American, WI	9/27/90 4/29/97 (ESD) 9/30/98 (ROD-A)	4/97 9/30/98	EPA	Soil, Ground water	Fact sheet; public comment period; public meeting held.	Fed = 700 hours Contr. = $10 K Est'd Savings = $2.0 M
	Type of Change: From - biodegradation of contaminants; residential clean-up standards; permeable soil cover; To - low temperature thermal desorption of contaminants; nonresidential clean-up standards; impermeable soil cover.					
	Factual Basis: Advances in contaminant treatment technology; potential remediated land use was reevaluated, greater presence of dense non-aqueous phase liquids than expected.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 5 Ott/Story/Cordova Chemical Co., MI OU3	9/27/93 2/26/98 (ROD-A)	5/22/95 2/98	EPA	Soil	State concurs; moderate response, stating moderate disfavor of reduction in scope of remedy.	Fed = 700 hours Contr. = $171 K Est'd Savings = $7.9 M
	Type of Change: From - low temperature thermal desorption (LTTD) unit which thermally treated excavated contaminated soils; To - elimination of LTTD; revises the volume of soils to be remediated by excavation and off-site disposal as a result of an understanding that the land use for the site will remain industrial instead of residential.					
	Factual Basis: Original cleanup standards cited in the OU3 ROD were for residential use of site ground water and soils. The site was deemed more appropriate for future industrial or commercial land use, thus the soil cleanup standards were readjusted.					
Region 5 Refuse Hideaway Landfill Site, WI	6/28/95 9/30/98 (ESD)	4/98 9/98	EPA	Ground water	State concurred with the ESD.	Fed = 200 hours Contr. = $30 K Est'd Savings = $2.7 M
	Type of Change: From - anticipated implementation of ground water extraction and treatment component of remedy; To- no installation.					
	Factual Basis: A significant decrease of total VOCs in ground water indicated that ground water should meet the remedial objective within a reasonable period of time if source control measures continue to be operated and maintained.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 5 Reilly Tar and Chemical, IN OU2	6/92 (ROD) 9/30/93 (ROD) 10/6/97 (ESD)	5/92 10/97	EPA, State	Ground water, Soil	State concurred; published notice of the ESD.	Fed = 80 hours Contr. = Unknown Est'd Savings = $1.25 M
	Type of Change: From - excavation, on-site thermal desorption of contaminated soil; To - excavation and off-site treatment of the contaminated soils.					
	Factual Basis: The majority of soils to be treated as part of the remedial action contained extremely high BTU levels, untreatable by a thermal desorption system.					
Region 5 Springfield Township Dump, MI	09/02/90 11/10/93 (ESD) 6/10/98 (ROD-A)	3/98 6/98	EPA, PRPs	Soil, Ground water	The State accepted change; high community involvement.	Fed = 500 hours Contr. = 0 Est'd Savings = $26.0 M
	Type of Change: From - on-site incineration of polychlorinated bi-phenyl-contaminated soil; To - excavation and treatment via soil washing of contaminated surficial soils, a limitation on the potential for future exposure to contaminants, the in-situ treatment of subsurface soils through soil vapor extraction, and the extraction and treatment of ground water.					
	Factual Basis: The remedy was altered to reflect current State standards.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 5 Tar Lake, MI	9/29/92 7/30/98 (ESD)	7/97 7/98	PRPs, EPA	Ground water, (product) Tar	State concurred with moderate community involvement.	Fed = 200 hours Contr. = 0 Est'd Savings = $2.0 M
	Type of Change: From - tar excavation with disposal into an on-site cell; To - tar excavation with disposal at a Fuel Reuse Plant.					
	Factual Basis: The tar had high enough BTU values to be used as fuel.					
Region 5 Tri-County/Elgin Landfill, IL*	9/30/92 6/25/96 (ESD)	2/96 4/96	EPA	Ground water	State concurred with ESD; community informed through updated Administrative Record and newspaper advertisement.	Fed = 150 hours Contr. = 25 hours Est'd Savings = $3.0 M
	Type of Change: From - landfill cap, active landfill gas collection system, and ground water/leachate pump and treat system; To - landfill cap and active landfill gas collection system; ground water/leachate pump and treat system deferred pending further analysis of effectiveness of natural attenuation.					
	Factual Basis: February 1996 Pre-Design Investigation Study Report, as well as on-going residential and ground water monitoring well sampling and analysis program. *FY96 information reported in FY98.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 5 Tri-County/Elgin Landfill, IL	9/30/92 4/23/98 (ESD)	11/26/96 9/30/97	EPA, State	Soil, Landfill, Ground water	State concurred with ESD; community informed through updated Administrative Record and newspaper advertisement.	Fed = 50 hours Contr. = 20 hours Est'd Savings = $1.95 M
	Type of Change: From - low permeability clay barrier layer landfill cap; To - synthetic landfill cap, including a geomembrane, geonet, geotextile, and 18 inches of soil cover.					
	Factual Basis: Results of a pre-design investigation demonstrated the original remedy to be unsuccessful over a long term basis.					
Region 5 Waite Park Wells/ Burlington Northern Car Shop, MN	7/14/94 8/98 (ESD)	6/95 8/98	State	Soil	State has responsibility for the site.	Fed = $1 K State= $5 K Contr. = Not available Est'd Savings = $500 K
	Type of Change: From - solidification and on-site containment; To - excavation, off-site disposal, and the use of institutional controls.					
	Factual Basis: Additional lead-impacted soil was identified that exceeded the cleanup levels.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region **Site Name, State**	**Date of** **Original ROD** **Date of Change** **(ESD/ROD-A)**	**Date Review** **Commenced** **Date Review** **Completed**	**Change Initiator**	**Media**	**State/Community Involvement**	**Est'd Resource Demands -** **Fed/Contr.** **Est'd Cost Savings**
Region 5 Woodstock Municipal Landfill, IL	6/30/93 7/15/98 (ROD-A)	12/96 7/98	PRP	Soil, Ground water, Sediment, Landfill gases, Leachate	State involved with development of materials for public meeting. Public comments addressed. State concurred with amended remedy.	Fed = 100 hours Contr. = 50 hours Est'd Savings = $2.5 M
	Type of Change: From - soil/sediment excavation and consolidation, install landfill cap and landfill gas collection system, and pump and treat system for ground water; To - excavate and consolidate sediments and sludges, install geosynthetic landfill cap and landfill gas venting, sediment control system, and monitored natural attenuation for ground water with a contingent extract, treat and discharge system.					
	Factual Basis: The results of pre-design investigation for concentrations of vinyl chloride lead to a change in the remedy.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 5 - FY99						
Region 5 American Chemical Services, IN	9/30/92 7/27/99 (ROD-A)	12/98 7/27/99	PRP	Soil, debris	State concurred with the update.	Fed = 1700 hours* Contr. = $ 610K* Est'd Savings = $ 80.0 M
	Type of Change: From - excavation and treatment using low temperature thermal desorption (LTTD); To - containment using slurry wall and capping and treatment using soil vapor extraction to remove VOCs. Ground water pump and treat, wetlands excavation, and intact drum removal are not affected.					
	Factual Basis: Post-ROD materials handling study demonstrated that original excavation/LTTD remedy may be unsafe to implement; post-ROD treatability study demonstrated that LTTD is not applicable for much of the wastes, that incineration (banned in Indiana) is more applicable; resulting revised cost estimate pegged RA costs at $150 million to $246 million versus (1992) cost estimate in ROD of $38 million to $47 million. * These figures represent work conducted from 10/94 to 9/98. The ROD remedy review required reevaluating technically complex issues, reopening the baseline risk assessment, and conducting substantial treatability studies.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 5 Bennett's Disposal, IN	8/3/84 (Enforcement Decision Document) 10/15/98 (ROD-A)	2/94 10/15/98	EPA, PRP	Soil	State concurrence; community involvement	Fed = $100,000 Contr. = $80,000 Est'd Savings = not available
	Type of Change: From - incineration of 6 PCB contaminated sites in a to-be-built municipal waste fired incinerator. Due to community opposition, the incinerator was not constructed. The cost was estimated to be $0 for the remedy due to the fees charged to incinerate municipal waste; To - The ROD Amendment called for the excavation and off-site disposal in a permitted PCB landfill. Any capacitors discovered during cleanup will be incinerated at an off-site, permitted PCB incinerator. The cleanup remediated the site to industrial/low occupancy standards.					
	Factual Basis: There was opposition from the community and from other governmental parties who signed the Consent Decree (City of Bloomington, State of Indiana, and Monroe County). The parties agreed to explore other remedies for the 6 sites under court supervision through the ROD Amendment process. The main portion of the site has been completed; the sediment removal remains.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 5 Bofors Nobel, Inc., MI	9/17/90 7/22/92 (First ROD-A) 7/16/99 (Second ROD-A)	9/97 7/16/99	EPA, PRPs	Soil, Ground water	State concurrence; some community comments to the first ROD-A. State concurrence on second ROD-A.	First ROD-A Fed = 800 hours Contr. = $ 900 K Est'd Savings = $ 40.0 M Second ROD-A Fed = 1,760 hours* Contr. = 0 Est'd Savings = $ 25.0 M
	Type of Change: First ROD-A From - soil treatment; To - containment in an on-site landfill. Second ROD-A From - on-site landfill; To - landfill with cap and slurry wall, with extra component of phytoremediation treatment.					
	Factual Basis: First ROD-A - Cost savings based on Remedial Pre-Design data (equivalent level of protection). Second ROD-A - Cost savings based on Potentially Responsible Parties' proposal (equivalent protection). * It took 22 months and several drafts to reconcile changes from the PRP, the State, and others on the ROD amendment.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 5 Butterworth #2 Landfill, MI	9/29/92 10/23/98 (ESD #1) 12/23/98 (ESD #2)	9/1/98 10/98 12/98	PRP	Ground water, Soil	State negotiations with PRP	Fed = 40 hours Contr. = unknown PRP contractor costs Est'd Savings = $ 2.7 M
	Type of Change: From - development of alternative concentration limits (ACLs) based on 8 quarters of sampling of ground water at the site; four foot clay/soil cover over Radio Tower and Station Building area; To - ACLs using the State's ground water/surface water interface procedures; one foot clay/soil cover over Radio Tower and Station Building area.					
	Factual Basis: Part 201 of State of Michigan National Resources and Environmental Protection Act for ACL change. Leachate data showing highly weathered material in Radio Tower and Station Building area and PRP assurance that the soil cover would be replaced by clay if ACL exceedances arose from the Radio Tower and Station Building area.					
Region 5 Fields Brook, OH Sediment OU	9/30/86 (ROD-A) 8/15/97 (ESD #1) 4/8/99 (ESD #2)	 8/97 4/99	 PRPs EPA	 Sediment Sediment	Limited State concurrence.	Fed = Unknown* Contr. = Unknown* Est'd Savings = not available
	Type of Change: From - thermal treatment of excavated sediments at an off-site facility; To - modification of all site RODs to address radionuclides; sediments planned for incineration must contain background levels of radionuclides; if levels are above background, sediment is to be solidified and disposed of on-site; additional clay added to base of the landfill.					
	Factual Basis: Discovery of radionuclides in site soils and sediments necessitated modification of site cleanup decisions. * Unable to provide cost increases or cost savings on an OU or ESD basis, because the OU's were combined in the remedy action.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 5 H. Brown Co. Inc., MI	2/25/98 4/5/99 (ESD)	10/2/98 4/5/99	PRP	Soil, Ground water	State concurrence.	Fed = 106 hours Contr. = $0 Est'd Savings = $ 800 K
	Type of Change: From - constituents on the list of cleanup standards for soil and ground water; To - reduction of constituents on the list of cleanup standards for soil and ground water.					
	Factual Basis: The PRPs were able to demonstrate based upon data from the Remedial Investigation (RI) and Pre-Design data that several contaminants included in the list of cleanup standards were either present at background levels or were only detected in one sample throughout the investigations.					
Region 5 Lakeland Disposal Services, Inc., IN	9/28/93 10/15/98 (ROD-A)	N/A 10/15/98	PRPs	Soil	State reviewed and concurred on the ROD-A.	Fed = 100 hours Contr. = $ 134 K Est'd Savings = $ 6.3 M
	Type of Change: From - excavation; off-site incineration; To - on-site treatment utilizing Low Temperature Thermal Desorption (LTTD) of Waste Area #2.					
	Factual Basis: As a result of the data collected during redesign studies, the PRPs requested a modification for Waste Disposal Area #2 (LTTD instead of off-site incineration). EPA believed that this update represents the best balance of the nine criteria and was the most effective alternative which provides for overall protection of human health and the environment. In other words, the LTTD option was found to be equally protective and involved a reduced cost.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 5 MacGillis & Gibbs/Bell Lumber & Pole, MN	12/31/92 (OU1) 9/22/94 (OU3) 9/30/99 (ROD-A)	3/96 9/99	State; EPA; City of New Brighton, MN	Soil, Debris	State lead.	Fed = $140K Contr. = $170K Est'd Savings = $ 16.0 M
	Type of Change: From - soil washing of Operable Unit 1 (OU1) soils and on-site incineration of OU1 debris and also on-site incineration of OU3 soils; To - RCRA capping of OU1 and a portion of OU3, off-site disposal or incineration of OU1 debris and also biological/chemical oxidation-reduction treatment of the remainder of OU3 soils with off-site landfilling of the treated OU3 soils.					
	Factual Basis: The high cost of incineration and soil washing which totaled $26 million, as well as, unreliability of soil washing prompted reevaluation of the remedies. In addition, EPA's Presumptive Remedy guidance was issued subsequent to these RODs and had identified biological treatment as the Agency's primary presumptive remedy for wood treater sites which further prompted the reevaluation of the existing remedies.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 5 Neal's Dump, IN	8/3/84 (Enforcement Decision Document) 10/16/98 (ROD-A)	2/94 10/16/98	EPA, PRP	Soil	State concurrence; community involvement	Fed = $100,000 Contr. = $80,000 Est'd Savings = not available
	Type of Change: From - incineration of 6 PCB contaminated sites in a to-be-built municipal waste fired incinerator. Due to community opposition the incinerator was not constructed. The cost was estimated to be $0 for the remedy due to the fees charged to incinerate municipal waste. To - The ROD Amendment called for the excavation and off-site disposal in a permitted PCB landfill. Any capacitors discovered during the cleanup will be incinerated at an off-site, permitted PCB incinerator. The original cleanup remediated the site to industrial/low occupancy standards.					
	Factual Basis: Community opposition along with the other governmental parties who signed the Consent Decree opposing the remedy (City of Bloomington, State of Indiana, and Monroe County). The parties agreed to explore other remedies for the 6 sites under court supervision through U.S. EPA's ROD amendment process. The ROD Amendment called for the excavation and off-site disposal in a permitted PCB landfill. Any capacitors discovered during the cleanup were incinerated at an off-site, permitted PCB incinerator. The amended cleanup remediated the site to residential/high occupancy standards. The site was de-listed from the NPL.					
Region 5 Neal's Landfill, IN	8/3/84 (Enforcement Decision Document) 3/29/99 (ROD-A)	2/94 3/29/99	EPA, PRP	Solid waste	State concurrence; community involvement	Fed = $1.0 M Contr. = $16.0 M Est'd Savings = not available
	Type of Change: From - building municipal waste fired incinerator and subsequent incineration of 6 PCB contaminated sites; To - source control operable unit and a hot spot, consolidation and capping, future operable units for water treatment and sediment removal.					
	Factual Basis: Community opposition along with governmental parties who signed the Consent Decree opposing the remedy. The parties agreed to explore other remedies for the 6 sites under court supervision through the ROD Amendment process.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 5 Ritari Post and Pole, MN	6/30/94 7/2/99 (ESD)	10/1/98 7/2/99	State	Soil	State fund lead site.	Fed = minimal Contr. = minimal Est'd Savings = $ 4.0 M
	Type of Change: From - land treatment; To - consolidation and capping.					
	Factual Basis: New information suggested that the land treatment would not be effective.					
Region 5 Spiegelberg Landfill, MI	6/29/90 10/22/98 (ESD)	Spring 1998 10/22/98	EPA	Ground water	Fact sheet sent to residents in area; public notice; State concurrence.	Fed = $ 18 K Contr. = not available Est'd Savings = $ 200 K/yr (PRPs)
	Type of Change: From - pump and treat; To - monitored natural attenuation; updated current clean up criteria to reflect current MCLs.					
	Factual Basis: The PRP requested a ROD Amendment. However, the selection of an ESD accomplished the same objectives, within the dictates of CERCLA, faster and with less expense than a ROD amendment for all parties involved (PRPs, EPA, and DEQ personnel). PRPs also reduced their O&M costs by $200,000 (their estimate).					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 5 Tri-County/Elgin Landfill St. Charles Township, IL	9/30/92 7/14/99 (ESD)	1/99 7/14/99	EPA	Soil	Public notice of ESD in local newspaper	Fed = 50 hours Contr. = 25 hours Est'd Savings = $ 500 K
	Type of Change: From - asphalt layer; To - revised high strength, low-permeability (1 x 10^{-8} cm/sec) asphalt cover. The revised asphalt cap that is to be installed on the Elgin Landfill property and the Elgin-Wayne property will consist of two discrete layers. The first layer will be a variable thickness base layer (minimum of 20 inches thick) and the second layer will be a 4-inch thick combined modified asphalt binder and modified asphalt surface course of specially produced high-strength, low permeability asphalt.					
	Factual Basis: The rationale for modifying the remedy for this portion of the site include the following: (1) the remedy is less intrusive to install which reduces the disruption to existing businesses during construction; (2) the remedy allows for the continued use of the Elgin Landfill and the Elgin-Wayne properties for container storage, parking, and other non-intrusive beneficial uses; (3) the remedy is more cost effective; (4) the 1 x 10^{-8} cm/sec permeability of the remedy will ensure that the new remedy will be as protective, if not more protective, than the alternative selected in the ROD; and (5) the design will incorporate a lysimeter that will definitely measure seepage that might occur through the low-permeability asphalt cap, alerting the U.S. EPA, the Illinois EPA, and the respondents to the need for repair or re-evaluation of the remedy.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 6 - FY98						
Region 6 Petro-Chemical Systems, Inc. (Turtle Bayou), TX OU2	9/6/91 4/30/98 (ROD-A)	3/12/96 4/98	EPA	Ground water, Soil	State involvement occurred throughout ROD Amendment Process; State and community concurred on amended remedy; public meetings; site tours; public comment.	Fed = 600 hours* Contr. = $0 Est'd Savings = $6.4 M
	Type of Change: From - soil vapor extraction (SVE), containment, slurry wall, aquifer sparging; soil cleanup criteria for benzene; To - additional remedy components including: in-situ aquifer bioremediation; bioventing, aqueous phase soil bioremediation, soil excavation and biotreatment; in-situ thermal desorption; soil washing; monitored natural attenuation; and institutional controls.					
	Factual Basis: Site cleanup criteria for benzene were recalculated using site-specific data. The narrowing of the site boundary is based on years of field investigations and contamination data. Based on further site characterization, field pilot studies, and ongoing operation, additional remedies were identified. * Allowed for the use of several remediation technologies, in addition to SVE; several drafts of the ROD amendment were required to satisfy the State and others.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 6 South 8th Street Landfill, AR	9/29/94 7/22/98 (ROD-A)	6/1/97 7/21/98	PRP	Soil, Sludge	Low to moderate State/Community interest; public meetings held with a local community group and State health department; State concurred with amended remedy.	Fed = 200 hours Contr.= $0 Est'd Savings = $4.9 M
	Type of Change: From - excavation, stabilization of oily sludge pit, off-site disposal; To - in-situ stabilization/solidification. This amendment also modifies the extent of the natural soil cover to be installed over the landfill in the source control OU.					
	Factual Basis: The results of recent treatability testing lead to a change in the remedy.					
Region 6 Texarkana Wood Preserving Site, TX	9/25/90 3/13/98 (ROD-A)	4/1/96 11/1/98	Public	Soil	Community concerns in form of petition to Congressman; public comment period; CAG formed.	Fed = 500 hours Contr. = Negligible Est'd Savings = $3.5 M
	Type of Change: From - thermal destruction to incinerate contaminated soil; To - capping of all soils above remediation goals and construction of a fence around capped soil.					
	Factual Basis: The community was opposed to original remediation action (incineration). A consensus was reached with the community advisory group (CAG) to use a cap for contaminated soils—an equally protective remedy.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 6 Vertac, Inc., AR OU2	9/17/96 1/12/98 (ESD)	8/11/97 1/5/98	EPA	Soil	State was involved with development of the document and provided comments; no additional public involvement was initiated. State concurred with ESD.	Fed = 100 hours Contr. = Negligible Est'd. Savings = $15.0 M
	Type of Change: From - on-site consolidation of dioxin-contaminated soil into RCRA Subtitle C Landfill; To - additional consolidation of dioxin-contaminated soil from the "Jacksonville Residential Areas site" in the Vertac on-site Subtitle C landfill.					
	Factual Basis: The results of an Exposure Investigation performed jointly by ATSDR and State Health Department and data obtained through additional rounds of sampling lead to a change in the remedy.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 6 - FY99						
Region 6 Cleveland Mill, NM	9/22/93 9/20/99 (ROD-A)	Spring 1997 9/20/99	EPA	Tailings, Sediments	State provides oversight; public meeting held; State and community concurrence.	Fed = not available Contr. = not available Est'd Savings = not available
	Type of Change: From - excavation of waste material, transportation of the material to a reprocessor for treatment and disposal of residuals at the reprocessing facility in an area where other tailings and residuals from ore-processing were disposed; To - no further action with continuation of groundwater and surface water monitoring.					
	Factual Basis: The site threat was addressed by a time critical removal action since a reprocessor could not be found.					
Region 6 United Creosoting, TX	9/30/86 9/29/89 10/14/98 (ROD-A)	3/98 10/14/98 (ROD-A)	EPA	Soil	EPA and State held several community meetings (including one formal public hearing).	Fed = 600 hours Contr. = $0 Est'd Savings = $ 21.0 M*
	Type of Change: From - innovative Critical Fluid Extraction (CFE) technology; To - Excavation, off-site treatment and disposal.					
	Factual Basis: Innovative technology failed to meet remediation rate (actual rate of 10 to 35 tons of soil per day vs. contract rate of 227 tons per day). Costs due to time extension would have greatly exceeded costs of off-site disposal. Public was very vocal in opposing continuation of innovative technology. * Cost savings were estimated by comparing the cost of the amended remedy to the projected cost (including overruns) of completing the CFE remedy.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 7 - FY98						
Region 7 Hastings Ground Water Contamination (Colorado Ave.), NE	9/91 5/98 (ROD-A)	10/97 5/98	PRP	Ground water	City and State concurrence.	Fed = 300 hours Contr. = TBD Est'd Savings = $1.0 M
	Type of Change: From - conventional vadose zone soil vapor extraction (SVE) (1998 ROD) and ground water pump and treat (1991 ROD); To - air sparging near source area and areas of ground water plume with high concentrations to increase rate of VOC removal from ground water via SVE.					
	Factual Basis: The results of air sparging pilot test lead to a change in the remedy. Ground water cleanup may be completed sooner than with pump and treat.					
Region 7 Pester Burn Pond, KS	9/30/92 9/29/98 (ESD)	5/92 9/98	PRP	Soil, Sludge, Ground water	State lead.	Fed = 0 hours Contr. = $0 Est'd Savings = $0
	Type of Change: From - bioremediation, soil flushing and soil/sludge disposal; To - add ground water interceptor trench extension to include southwest drainage ditch.					
	Factual Basis: The change in remedy resulted from geotechnical evaluation and a treatability test.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 7 - FY99						
Region 7 Des Moines TCE Site, IA OU 2, OU4	12/13/96 7/15/99 (ESD)	2/99 7/99	EPA	Soil, sediment, buildings	State supported ESD.	Fed = 60 hours Contr. = $ 6 K Est'd Savings = $ 1.2 M*
	Type of Change: From - institutional controls (land use restrictions) and O&M for separate components of three removals that provide similar levels of protectiveness; To - revised cost estimate for site management and maintenance of asphalt cap.					
	Factual Basis: Change in general approach to implementing the required land use restrictions and long-term O&M activities. * Site will not be included in the FY99 summary appendix because the update is strictly cost-related.					
Region 7 Martha C. Rose Chemical, MO	9/92 12/98 (ROD-A)	10/96 11/98	PRP	Ground water	City concurrence; State non-concurrence.	Fed = 180 hours Contr. = $0 Est'd Savings = $ 300 K (over 6 years)
	Type of Change: From - ground water monitoring; To - terminated ground water monitoring prescribed in ROD.					
	Factual Basis: In actual excavation, a significantly greater amount of soil/sediment was removed (approximately twice as much as originally planned). Ground water monitoring purpose was to signal mobilization of unknown contaminant sources. The chance of sources existing after the completion of the much more extensive excavation process is nearly nonexistent and ground water is not a likely exposure pathway.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 7 McGraw-Edison, IA	9/24/93 7/99 (ROD-A)	10/1/97 11/7/98	PRP	Ground water	State and community concurrence; public meeting held.	Fed = 200 hours Contr. = $ 8.4 K Est'd Savings = $ 1.3 M
	Type of Change: From - vacuum enhanced ground water recovery; To - iron reactive permeable barrier and monitored natural attenuation.					
	Factual Basis: The new innovative technology alternative will require less time and be more cost-effective.					
Region 7 Quality Plating, MO	1/95 9/99 (ROD-A)	9/97 9/99	State	Ground water	State concurrence.	Fed = 40 hours Contr. = $0 Est'd Savings = $ 3.0 M
	Type of Change: From - conventional pump and treat system; To - monitored natural attenuation.					
	Factual Basis: During RD it was discovered that the level of chromium^{+6} in the ground water had dropped by approximately one order of magnitude, likely due to a chemical reaction (redox reduction).					
Region 7 Strother Field, KS	3/94 12/98 (ESD)	3/98 12/98	PRP	Ground water	State concurrence.	Fed = 200 hours Contr. = $0 Est'd Savings = $ 4.0 M
	Type of Change: From - conventional pump and treat system; To - reduced pump and treat with monitored natural attenuation (MNA) water; implement contingency soil excavation/capping component.					
	Factual Basis: Result of study including a Soil Vapor Extraction (SVE) pilot study and ground water biodegradation investigation. MNA is occurring and SVE is impractical.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 8 - FY98						
Region 8 Burlington Northern (Somers Plant), MT	9/27/98 6/92 (1st ESD) 7/21/98 (2nd ESD)	7/1/98 7/21/98	EPA	Ground water, Soil	State concurred and signed ESD. Community was provided with a fact sheet.	Fed = 80 hours Contr. = $0 Est'd. Savings = $0
	Type of Change: From - bioremediation in an on-site land treatment unit; revised ground water remediation level for total non-carcinogenic PAH and total phenolics; To - updated 1998 remediation levels of COCs, PAH, cPAH revised, pyrene, napthalene and phenanthene.					
	Factual Basis: Changes in EPA toxicological information and updated relative potency factor (RPF) and toxicity equivalency factor (TEF) guidance on cleanup remediation levels established in 1989 ROD for COCs (including total PAHs, cPAHs, and phenolic compounds).					
Region 8 Lowry Landfill Site, CO	3/10/94 8/95 (1st ESD) 10/24/97 (2nd ESD)	4/23/96 10/24/97	PRP	Debris, Sludge, Leachate, Soil, Liquid waste, Residuals, Ground water	State supported the changes; community was opposed.	Fed = 700 hours* Contr. = $200 K Est'd Savings = $3.0 M
	Type of Change: From - excavation and characterization of contaminated materials for off-site treatment and disposal, treatment of ground water at an on-site treatment plant; To - excavation, drying/controlled aeration for contaminated materials in the former tire pile area, and on-site disposal of contaminated materials, and on-site pre-treatment of ground water, then piped to an off-site facility for additional treatment.					
	Factual Basis: Treatability tests indicated that proposed changes would best comply with NCP's nine criteria and potential impact of the construction of a sanitary sewerline west of the site. * Preparing the ESD, technical evaluations, responsiveness summary, and interacting with the public.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 8 Petrochem Recycling Corp/Ekotek, Inc., UT	9/27/96 12/9/97 (ESD)	3/13/97 12/9/97	PRP	Soil, Ground water	State supported all changes, except the alteration to the Soil Hot Spot Performance Standard for PCBs.	Fed = Not available Contr. = Not available Est'd. Savings = Not available see 5/99 ESD
	Type of Change: From - cleanup to soil performance standards, ground water treatment and discharge to a publicly-owned treatment works (POTW); To - cleanup to new performance standards for 2, 3, 7, 8-TCD and PCBs, ground water treatment, discharge to POTW, optional discharge to underlying aquifer.					
	Factual Basis: The changes documented in the ESD are based on new information received subsequent to issuance of ROD. New calculation of performance standards based on error correction, revised risk factors, and revised guidance.					
Region 8 - FY99						
Region 8 Chemical Sales, CO OU4	12/29/92 9/23/99 (ROD-A)	9/30/98 9/23/99	EPA	Ground water	No significant comments from State and community expected.	Fed = 80 hours Contr. = $0 Est'd Savings = $ 3.0 M
	Type of Change: From - connection of three wells to a water treatment plant; To - No Action (alternative water source was found).					
	Factual Basis: Memorandum of Understanding regarding a supplementary water supply was reached among U.S. Army, Shell Oil Company, and South Adams County Water and Sanitation District (SACWSD) in June 1996. Therefore, the hookup of the three wells was no longer needed.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 8 Eagle Mine, CO	3/29/93 9/1/99 (ESD)	7/1/99 9/1/99	EPA	Ground water	Endorsed by State; no significant comments expected.	Fed = 40 hours/yr Contr. = $0 Est'd Savings = $ 20 K/yr (over 13 years)
	Type of Change: From -no diversion of clean groundwater; To - drilling of a deep well to intercept and divert a clean source of water that was entering the plugged Eagle Mine (some 200 gallons/min had previously entered the mine and were eventually sent to a water treatment plant).					
	Factual Basis: An inflow of 200 gallons/min of known clean water was entering the Eagle Mine. This clean water became polluted with metals and was eventually collected for water treatment. This inflow has been intercepted by an 840 foot deep well and some 100 gallons/min are now pumped and discharged.					
Region 8 F.E. Warren AFB Cheyenne, WY Landfill 5A OU8	11/21/96 11/13/98 (ESD)	2/1/98 11/13/98	USAF	Landfill	Restoration Advisory Board Display Ad Fact Sheet	Fed = $ 6 K Contr. = $0 Est'd Savings = $ 240 K
	Type of Change: From - active gas collection system; To - perimeter monitoring for methane.					
	Factual Basis: Post-ROD soil gas surveys established that an active gas collection system was not needed. Post-ROD work also showed a smaller area/volume of landfill contents than originally assumed, savings due to only the gas system are part of the $2.6 M, overall, due to smaller waste volume. No contractor costs attributed to change in design because change was made early in the design stage and no re-working was needed. USAF did not itemize.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 8 F.E. Warren AFB Cheyenne, WY Landfill 6 OU3	12/21/95 2/3/99 (ESD)	2/1/98 2/3/99	USAF	Landfill	Restoration Advisory Board Display Ad Fact Sheet.	Fed = $ 6 K Contr. = $ 2 K Est'd Savings = $ 583 K
	Type of Change: From - active gas collection system; To - passive gas venting system.					
	Factual Basis: Post-ROD soil gas surveys established that an active gas collection system was not needed. Total saved over RI/FS estimate was $4.5M (includes reduced costs attributed to ESD). Post-ROD work also established a smaller area/volume than originally assumed. Total savings were not itemized by USAF.					
Region 8 Idaho Pole Site, MT	9/28/92 11/27/98 (ESD)	7/1/98 11/27/98	EPA	Soil, Ground water, Demolition debris	State concurred and signed ESD; fact sheet provided to community.	Fed = 120 hours Contr. = $0 Est'd Savings = None
	Type of Change: From - expansion of amount of work done at site from the original scope which did not include soil excavation adjacent to buildings and structures; To - additional work which included building demolition and excavation of contaminated soils where remediation levels were exceeded. IPC discontinued active operations in October 1997. Additional cleanup under plant structures will be required. ESD will expand scope of ROD to include building demolition and soil cleanup where remediation levels are exceeded.					
	Factual Basis: Original RI identified areas of the site associated with existing structures where remediation levels are exceeded.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 8 Petrochem Recycling Corp/Ekotek, Inc., UT	9/27/96 5/11/99 (ESD)	3/30/99 5/11/99	PRP	Soil, Ground Water	State and community support.	Fed = None Contr. = None Est'd Savings = Long term costs considered equal. See Factual Basis.
	Type of Change: From - storing of contaminated soils in an on-site repository; To - removal of manganese; all soil exceeding "soil performance standards" will be sent off-site to a RCRA-permitted landfill (no on-site repository).					
	Factual Basis: The changes documented in the ESD are based on new information received subsequent to issuance of ROD. The manganese reference dose value was updated in the IRIS database. Soil volume estimates and total remedy cost estimates were compiled during the value engineering component of the Remedial Design. Total costs in the original ROD estimate were $6.1 million. These costs were updated with the new estimate being $10.0 million. The changed remedy in this ESD is also estimated to be $10.0 million.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 9 - FY98						
Region 9 JH Baxter Superfund Site, CA	9/27/90 3/27/98 (ROD-A)	8/95 3/27/98	PRPs	Soil, Ground water	Approved by State and community. EPA conducted public meeting and addressed comments in responsiveness summary.	Fed = 4,500 hours* Contr. = $550 K Est'd Savings = $20.0 M
	Type of Change: From - extraction of ground water followed by biological treatment and chemical precipitation, polishing, and disposal; excavation of organic soils and biological treatment and disposal to RCRA-equivalent cell; excavation of inorganic soils for biological treatment, chemical fixation, and on-site disposal in RCRA-equivalent cell; To - incorporate slurry wall into ground water remedy. TI waiver for ground water within the Dense Non-Aqueous Phase Liquid (DNAPL) zone.					
	Factual Basis: A Focused Feasibility Study found that the extent of DNAPLs was much greater than previously thought. * A complex site; cleanup levels were reexamined and revised; most of the remedy decision was rewritten.					
Region 9 Lorentz Barrel and Drum, CA OU2	9/22/88 4/24/98 (ESD)	1992 4/24/98	PRPs	Ground water	EPA, State, and Regional Water Quality Board concurred; Administrative Record available for review.	Fed = 200 hours Contr. = $0 Est'd Savings = $30 K (over 10 years)
	Type of Change: From - ground water extraction and treatment using ultra violet light and oxidizing chemicals (ozone) (UV/Ox) and then granular activated carbon (GAC) filters with discharge to a local storm sewer; To - GAC filtration exclusively to treat contaminated water.					
	Factual Basis: The levels of organic contaminants have decreased since the start of the ground water treatment system and UV/Ox was found to be inefficient.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 9 Phoenix-Goodyear Airport, AZ	9/87 12/95 (3rd ESD) 3/98 (4th ESD)	12/95 3/98	PRPs, EPA	Ground water	The State concurred with EPA on ESD #3; local government was briefed and the community was notified as required by regulation.	Fed = 100 hours Contr. = $5 K Est'd Savings = $3.1 M (3rd ESD–$840 K* 4th ESD–$2.25 M)
	Type of Change: (For 3rd ESD) From - ground water pump and treat system; To - ground water pump and treat system with air sparging hot spots. (For 4th ESD) From - chromium Ground water Standard at 50 ppb; To - chromium Ground water Standard at 100 ppb.					
	Factual Basis: (For 3rd ESD) It is a well documented fact that volatile organic compound (VOC) contaminants in the environment can be removed from the unsaturated zone (vadose zone) at a significantly less cost when compared to the cost of removing VOC's from saturated zone (ground water). At the PGA site, site-specific costs of $60/lb VOC removed via soil vapor extraction (SVE) versus $1000/lb VOC removed via ground water pump and treat were calculated. Hence, $940 of savings for every pound of VOC that is removed. The lead PRP at this site implemented air sparging in VOC-contaminated hot spots in the ground water which were underlying an existing soil vapor extraction system. (For 4th ESD) New information was discovered when the MCL for chromium was finalized. * Although the site was included in the FY96-97 summary report, the savings were not reported at that time and are being reported now.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 9 Selma Pressure Treating, CA*	9/88 4/97 (ESD)	3/97 4/97	EPA	Ground water	State reviewed and concurred. Fact sheets were sent to people on community distribution list; public comment period provided.	Fed = 120 hours Contr. = 0 Est'd Savings = $900 K
	Type of Change: From - return of effluent via reinjection wells; To - return of effluent via percolation ponds.					
	Factual Basis: Additional data gathered in design; reinjection was considered to entail risk of spreading ground water contamination. * Although this update was counted in updates reported for FY97, estimated savings and resource demand information were reported at that time.					
Region 9 Stringfellow Acid Pits, CA	7/18/84 ROD 2 7/9/98 (ESD)	11/7/97 7/8/98	EPA, State	Ground water	State and the Community Technical Advisor support the ESD; public hearings; comments solicited from State, PRPs, and the community on the ESD.	Fed = 40 hours Contr. = $0 State = $1.8 M Est'd Savings = $28.4 M
	Type of Change: From - transportation of treated ground water (30 million gallons/yr) to disposal point by tanker truck; To - transportation of the treated ground water to disposal point by pipeline.					
	Factual Basis: Treated wastewater transported from pretreatment plant (PTP) to regional wastewater collection system used to be by tanker truck. Since ROD completion, making a direct pipeline connection has been cost-effective and eliminates potential community impacts from spillage during road transport.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 9 - FY99						
Region 9 Hunter's Point (USN), CA	12/31/97 10/28/98 (ESD)	4/1/98 10/28/98	EPA	Soil	State reviewed ESD; discussion with community advisory board (RAB); formal public notice by Navy pending.	Fed = 40 hours Contr. = not available Est'd Savings = None
	Type of Change: From - maximum depth of soil cleanup to ground water; To - maximum depth of soil cleanup to 10 feet below ground surface.					
	Factual Basis: The change was required to bring the ROD into congruence with the proposed plan and feasibility study that were submitted to the community for comment. The ROD had mistakenly assumed that cleanup to ground water was equivalent to cleanup to 10 feet. In some cases, cleanup to ground water would have resulted in cleanup of less than 10 feet and that was not the intent of the remedial action.					
Region 9 Koppers Co., Inc., CA	9/13/89 9/23/99 (ROD-A)	1/26/99 9/23/99	PRP, EPA,	Ground water	Proposed plan not opposed, accepted by DTSC & RWQCB.	Fed = 420 hours Contr. = $ 10.7 K Est'd Savings = $ 11.3 M
	Type of Change: From - pump and treat only; To - on-site bioremediation and pump and treat, plus off-site bioremediation with a 200-acre technical impracticability (TI) Zone for DNAPL.					
	Factual Basis: On-site biodegradation augments the existing pump and treat system and restores the aquifer an estimated 10 years earlier. Off-site biodegradation will restore the aquifer within a similar time frame as pump and treat, but at one-eighth of the cost. The TI Zone waiver is due to DNAPL with monitoring showing containment. Savings are based on Total Present Worth Cost.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 9 Motorola, Inc. (52nd Street Plant), AZ	7/21/94 9/10/99 (ESD)	4/98 9/10/99	PRP	Ground water	State involvement; fact sheet and public meetings; technical meetings with technical assistance grant recipients; ADWR also involved.	Fed = 80 hours Contr. = $16 K Est'd Savings = $ 7.0 M (30 yr present value at 5%)
	Type of Change: From - air stripping or ultraviolet oxidation; reinjection of treated ground water; To - ultraviolet oxidation and granular activated carbon; discharge of treated ground water to Grand Canal.					
	Factual Basis: Ultraviolet oxidation and granular activated carbon are more cost effective and just as efficient as air stripping or UV/ox alone. Discharge of water is also more cost effective and will save on long-term O&M costs.					
Region 10 - FY98						
Commencement Bay Nearshore Tideflats; Former Asarco Tacoma Smelter Facility and Slag Peninsula, WA OU2*	3/24/95 7/2/96 (ESD)	prior to 9/95 7/2/96	EPA, PRP	Soil	Fact Sheet; two public comment periods; open houses; participants at the community meeting supported the change.	Fed = 30 hours Contr. = $0 Est'd Savings = $0
	Type of Change: From - siting the on-site containment facility in the arsenic kitchen area; To - siting the on-site containment facility in the parking lot.					
	Factual Basis: Seismic tests, required by the ROD, revealed that the original location of the on-site containment was not safe in the event of an earthquake. * FY96 information reported in FY98.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 10 Eielson Air Force Base, AK OU3, 4 and 5	9/30/95 (OU3, 4, 5) 9/98 (ROD-A)	5/95 9/98	Air Force, EPA, State	Ground water, Soil, Drums, Landfill	Public comment period; public meeting; newspaper advertisement; infomercial on television; no public comments received.	Fed = Not available Contr. = $1.2 M Est'd Savings = $20.0 M
	Type of Change: (For Site DP44) From - soil vapor extraction (SVE); To - no further action. From - pump and treat; To - monitoring and institutional controls. (For Site SS35) From - soil cover; To - no action and monitoring. (For Site ST58) From - bioventing; To - no action after removal. From - bioventing; To - TI for lead, natural attenuation and biodegredation for petroleum, and institutional controls. (For Site LF03/FT09) From - cover/cap; To - institutional controls and monitoring. From - monitoring and institutional controls; To - same.					
	Factual Basis: Recent sampling, pilot test of SVE, biological risk assessment, and re-evaluation of risk. A technology effectiveness evaluation (prior to implementation of original remedy) showed that lead is largely immobile in the subsurface, and that lead contamination cannot be readily removed using pump and treat technology.					
Region 10 Fort Lewis Logistics Center, WA	9/90 9/9/98 (ESD)	1/97 9/98	EPA, Fed. Fac.	Ground water	Public notice was issued.	Fed = 180 hours Contr. = $0 Est'd Savings = Unknown
	Type of Change: From - ground water extraction and treatment in on-site treatment facilities; To - add innovative technologies to accelerate treatment and/or control of the source area, the contaminant plume, and the unconfined aquifer.					
	Factual Basis: New site characterization studies, limited system performance data, recent information concerning the effectiveness of pump and treat systems, and the availability of new and innovative treatment options.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 10 Hanford 200 Area; Environmental Restoration Disposal Facility, WA*	1/20/95 9/25/97 (ROD-A)	1/97 9/25/97	DOE, EPA, State	Soil, Debris	Fact sheet; public comment periods; briefings of the Hanford Advisory Board.	Fed = 55 hours Contr. = $0 Est'd Savings = operations savings not quantified; actual construction cost for two cells less than ROD-estimated cost for construction of facility.
	Type of Change: From - construction and operation of two disposal cells; treatment only at the OU where waste originates; To - construction and operation of four disposal cells; treatment at OU or at the disposal facility.					
	Factual Basis: Expansion of the approved disposal facility is necessary to continue remediation of the Hanford site. * FY97 information reported in FY98					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 10 Idaho National Engineering Lab, ID OU Pit 9	10/1/93 9/1/98 (ESD)	6/1/98 9/1/98	Fed. Fac.	Soil, Debris	EPA and State concurred. The community was notified.	Fed = 40 hours Contr. = $0 Est'd. Savings = no change
	Type of Change: From - physical separation, chemical extraction, and stabilization of contaminants; To - change in subcontractor and implementation of contingency path for the clean up of Pit 9.					
	Factual Basis: A change in subcontractor was necessary, initiating a contingency plan that involved a revised schedule.					
Region 10 McCormick and Baxter Creosoting Company, OR	3/29/86 3/17/98 (ROD-A)	6/97 3/17/98	State	Soil	Fact sheets prepared; public meeting; presentation at neighborhood association meeting.	Fed = 75 hours Contr. = $10 K Est'd Savings = $0
	Type of Change: From - on-site biological treatment of soil with off-site disposal including soil with significant dioxin concentrations and cap; To - off-site disposal of soil at RCRA-permitted facility.					
	Factual Basis: Increased levels of dioxin in soils lead to a change in the remedy.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 10 Umatilla Army Depot, OR Explosives Washout Lagoons, Soils OU*	9/25/92 9/30/97 (ESD)	6/97 9/30/97	Army, EPA	Soil	Active State involvement; public notice of ESD (no comments received).	Fed = 40 hours Contr. = $0 Est'd Savings = $445 K
	Type of Change: From - using soil treated by composting for backfilling; To - using soil treated by composting as an organic component in on-site re-vegetation efforts.					
	Factual Basis: The treatment of explosives contaminated soil by composting resulted in lower final concentration than predicted, combined with the suitability of the compost for on-site vegetative restoration, results in lower costs from reduced need to purchase compost from local commercial sources. * FY97 information reported in FY98.					
Region 10 - FY99						
Region 10 Commencement Bay - South Tacoma Channel NPL Site, South Tacoma Field, WA	9/29/94 8/10/99 (ESD)	3/99 8/10/99	PRP	Ground water, Soil	Washington Department of Ecology concurred with the revised approach. A public notice of the ESD was published.	Fed = 40 hours Contr. = $0 Est'd Savings = $ 1.0 M
	Type of Change: From - air sparging and soil vapor extraction at the Pioneer Builder's Supply section of the site; To - monitored natural attenuation and institutional controls at the Pioneer Builder's Supply section of the site.					
	Factual Basis: Post-ROD sampling results indicated that the contaminated ground water area was smaller and less mobile than previously assumed. In addition, the contaminant concentrations have been decreasing since the removal of the source in 1991.					

Summary of Remedy Update Information for FY98 and FY99 for Sites Without Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Savings
Region 10 Hanford 200 Area, WA Environmental Restoration Disposal Facility	1/20/95 3/25/99 (ROD-A)	2/98 3/25/99	DOE	Landfill, Leachate	Fact sheet; public comment period; newspaper notices; and briefings to Hanford Advisory Board.	Fed = 200 hours Contr. = $0 Est'd Savings = Not Quantified
	Type of Change: From - landfill leachate managed as a RCRA hazardous waste; To - conditional listing of the leachate so it no longer needs to be managed as a RCRA hazardous waste.					
	Factual Basis: Contaminant concentration data collected on landfill leachate supported conditional delisting of the leachate.					
Region 10 Standard Steel, AK	7/16/96 11/18/98 (ESD)	9/98 11/18/98	PRP	Soil	State supported change; newspaper notice.	Fed = 30 hours Contr. = $0 Est'd Savings = $ 30 K (not including future O&M savings)
	Type of Change: From - fence around capped area of site; To - no fence necessary around capped area of site (waiver of 40 CFR 761.75(b)(9)(i)).					
	Factual Basis: Final approved cap design added geomembrane cover system and 3 feet of clean soil. Thus, site did not require protective fence.					

Appendix A.2:
Summary of Remedy Update Information for FY98 and FY99 for Sites With Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Increase
Region 2 - FY98						
Region 2 Reich Farm, NJ	9/30/88 8/95 (1st ESD) 3/25/98 (2nd ESD)	2/97 3/25/98	EPA	Ground water	State concurred; EPA conducted public meeting; Administrative Record is available for public review.	Fed = 100 hours Contr. = $0 Est'd Increase = $2.0 M
	Type of Change: From - extraction, treatment of contaminated water via air stripping and carbon absorption, reinjection to aquifer and later discharge to municipal water supply; To - additional ground water treatment, allowable discharge as potable water supply to designated recharge area.					
	Factual Basis: Additional studies showing plume extended further than previously expected. Air stripper has been effective.					
Region 2 - FY99						
Region 2 American Cyanamid Wiring, PR	7/12/96 11/30/98 (ESD)	6/1/98 11/30/98	PRP	Soil, Sludge	There was state support for the change and limited community interest in the remedy update	Fed = 40 hours Contr. = 0 Est'd Increase = $5.4 M
	Type of Change: From - containment of iron oxide waste; To - recycling					
	Factual Basis: PRP felt that there was a future ground water release risk that would result in excess future O&M costs to the remedy. The original ROD estimate was thought to be low. Lastly the PRP was able to secure favorable rates for recycling.					

Summary of Remedy Update Information for FY98 and FY99 for Sites With Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Increase
Region 2 NL Industries, Inc., NJ	7/8/94 6/21/99 (ESD)	2/11/99 6/21/99	EPA	Soil, Sediment	State reviewed and commented on ESD	Fed = 40 hours Contr. = $0 Est'd Increase = Slight Increase
	Type of Change: From - on-site disposal of soil and sediment; To - off-site disposal of soil and sediment					
	Factual Basis: Due to the elimination of solid waste flow control restrictions, EPA determined that off-site disposal of the contaminated soil and sediment could be conducted at a cost comparable to that for on-site disposal (including the cost for construction of a landfill). In addition, off-site disposal of the soil and sediment could be implemented more quickly because it did not require construction of a landfill.					
Region 3 - FY98						
Region 3 East Mount Zion, PA	6/29/90 7/96 (ESD)*	5/96 7/96	EPA	Soil	State concurred.	Fed = 75 hrs. Contr. = 0 Est'd. Increase = $25 K
	Type of Change: From - no relocation of residents; To - temporary relocation of residents during the solid waste excavation and purchase of additional property to secure excavation access.					
	Factual Basis: EPA deemed an ESD necessary to prevent potential health threats to residents during remedial action. * FY96 information reported in FY98.					

Summary of Remedy Update Information for FY98 and FY99 for Sites With Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Increase
Region 3 - FY99						
Region 3 Berkley Products Dump, PA	6/28/96 8/20/99 (ESD)	12/98 8/20/99	EPA	Soils, Leachate Sediments, Landfill materials	State concurrence; public notification.	Fed = 182 hours Contr. = 240 hours Est'd Increase = $ 1.1 M
	Type of Change: From - Excavation and placement of contaminated soils, leachate sediments, and landfill materials into an onsite landfill; landfill was to be filled and capped on-site; To - Excavation and placement of contaminated soils, leachate sediments, and landfill materials into onsite landfill; unanticipated excess 16,500 tons of material will also be excavated, characterized, transported and disposed offsite.					
	Factual Basis: The excess excavated material cannot be accommodated by the proposed landfill. An expansion of the on-site landfill is not possible because it is unlined, and because of the surrounding naturally steep inclines.					
Region 3 Keystone Landfill, PA	9/90 6/25/99 (ROD-A)	1/98 6/25/99	EPA	Ground water	State concurred with remedy change; community commented on amendment and EPA addressed comments.	Fed = 250 hours Contr. = not available Est'd Increase = $ 1.8 M
	Type of Change: From - no actions addressing migration of site related contaminants to surrounding areas; To - extraction and treatment of contaminated ground water which has migrated offsite and monitoring and/or installation of residential well treatment units; modifications were also made to the performance/clean up standards of the onsite pump and treat system currently operating onsite; and five year review will be required because hazardous substances above health-based levels still present on-site.					
	Factual Basis: These additions to the original remedy, aid in treating, reducing toxicity, mobility and volume of site related contaminants.					

Summary of Remedy Update Information for FY98 and FY99 for Sites With Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Increase
Region 3 Rhinehart Tire Fire, VA OU1	6/30/88 4/2/99 (ESD)	6/30/88 4/2/99	EPA, State	Surface water, Ground water	State concurrence.	Fed = 60 hours Contr. = $0 Est'd Increase = $ 1.3 M
	Type of Change: From - controlling soil erosion, increasing pond capacity, collecting surface water runoff, gravity settling of contained surface runoff and collecting of shallow ground water and oily seeps for oil/water separation; To - building a small plant to supplement the passive settling process in order to remove the metals.					
	Factual Basis: After initial implementation of measures from ROD, further sampling indicated that pond water exceeded allowable discharge levels for concentrations of zinc, aluminum and nickel.					
Region 3 Rhinehart Tire Fire, VA OU2	9/29/92 4/2/99 (ESD)	3/3/95 4/2/99	EPA, State, Fed. Fac.	Soil	State concurrence.	Fed = 60 hours Contr. = $0 Est'd Increase = $ 150 K
	Type of Change: From - excavation of soil beneath pond with zinc concentrations greater than 50 ppm; To - pond was covered with clean fill, compacted, graded, and vegetated.					
	Factual Basis: After several attempts to attain the standard, the excavation hit bedrock and further remediation was jeopardizing an adjacent earthen dam structure. Further work was suspended.					

Summary of Remedy Update Information for FY98 and FY99 for Sites With Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Increase
Region 3 Tonolli Corporation, PA	9/30/92 3/12/99 (ESD)	9/98 3/12/99	EPA	Soil	State concurrence.	Fed = 100 hours Contr. = $0 Est'd Increase = $ 1.1 M
	Type of Change: From - decontamination and demolition of non-structural components which would inhibit decontamination; excavation of lead contaminated soil; on-site landfill; pump and treatment system for leachate soil bioremediation; and plan for final grading of site; To - demolition and removal of former smelter buildings; excavation of an increased volume of lead-contaminated soil; expansion of an on-site landfill; pumping and treatment of an increased volume of leachate soil bioremediation; and modification of the final grading plan for the site.					
	Factual Basis: Concrete structures were discovered with high amounts of contamination and were unstable as a result of soil excavation required by the ROD. Additional information was discovered which affected other issues in the ESD, most often dealing with the need for removal or remediation of expanded areas of contaminated soil.					
Region 4 - FY98						
Region 4 Wrigley Charcoal Plant, TN	9/30/91 10/95 (ESD)*	7/95 10/95	EPA, State	Debris, Sludge, Soil	A fact sheet has been provided for the public.	Fed = 25 hours Contr. = $0 Est'd. Increase = $72 K
	Type of Change: Not a typical update, since additional work was required. Site required excavation of an additional 3,000 tons of contaminated material.					
	Factual Basis: Prevent leaching of contaminants from soil into creek. * FY96 information reported in FY98.					

Summary of Remedy Update Information for FY98 and FY99 for Sites With Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Increase
Region 4 Escambia, FL	2/12/97 4/30/98 (ESD)	2/98 4/30/98	EPA	Soil, O&M	Both State and community informed.	Fed = 20 hours Contr. = $0 Est'd Increase = $250 K/yr for 3 years
	Type of Change: From - No maintenance of stockpile; To - additional maintenance of stockpile.					
	Factual Basis: Allowed EPA to spend money to maintain the site until implementation of final remedy.					
Region 4 - FY99						
Region 4 Chemform, Inc., FL OU 1	9/22/92 4/2/99 (ESD)	10/98 4/2/99	State, EPA	Ground water	State reviewed ESD.	Fed = 50 hours Contr. = $0 Est'd Increase = $ 10 K
	Type of Change: From - no five-year reviews; To - five-year reviews at the site.					
	Factual Basis: Vinyl chloride (VC) has been detected in monitoring wells above its MCL level. VC is not listed in the OU 1 ROD as an ARAR, but its presence is attributable to the site and therefore warrants five-year reviews.					
Region 4 Chevron Chemical Co./Marzone OU1 Tifton, GA	9/94 11/98 (ROD-A)	3/97 11/98	EPA	Soil	Public meeting and comment period	Fed = $10,000 Contr. = $0 Est'd Increase = $150,000
	Type of Change: From: no discussion of dioxin contaminated soil in former burn pit area; To: performance standard and remedy for dioxin: excavation and off-site disposal.					
	Factual Basis: Dioxin contamination was discovered during remedial design phase. This ROD amendment was necessary to address dioxin contamination in the former burn pit area.					

Summary of Remedy Update Information for FY98 and FY99 for Sites With Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Increase
Region 4 NAS Cecil Field, FL Site 10 OU4	9/30/97 7/12/99 (ESD)	4/20/99 7/12/99	State	Soil	State concurrence; RAB was briefed and reviewed ESD.	Fed = 40 hours Contr. = $0 Est'd Increase = $50K
	Type of Change: From - original ROD was for No Further Action; To - soil excavation with off-site disposal.					
	Factual Basis: Based on data from Pre-Design Field Investigation and redevelopment plan. Remedy proposed by private party, and included facilities that would serve as impermeable barriers.					
Region 5 - FY98						
Region 5 H. Brown Co. Inc., MI	9/30/92 2/25/98 (ROD-A)	8/97 2/98	EPA, State	Soil, Sediments, Ground water	State concurred. EPA responded to eight public comments on the Proposed Plan.	Fed = 500 hours Contr. = $0 Est'd Incr = $3.1 M
	Type of Change: From - cap over contaminated soil; To - redevelopment of site including clean fill and construction of warehouse facilities.					
	Factual Basis: Based on data from Pre-Design Field Investigation and redevelopment plan. Remedy proposed by private party, and included facilities that would serve as impermeable barriers.					

Summary of Remedy Update Information for FY98 and FY99 for Sites With Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Increase
Region 5 - FY99						
Region 5 Fields Brook, OH Source Control OU2	9/29/97 4/8/99 (ESD)	1/98 4/8/99	EPA	Soil	State concurrence expected.	Fed = Unknown* Contr. = Unknown* Est'd Increase = $ 1.0 M*
	Type of Change: From - excavation of soils and backfill with clean soil, on-site containment of soils with cover and erosion blanket, disposal of soils either on-site or at an off-site TSCA landfill; removal of sediment and debris inside sewer lines and catch basin; To - modified all site RODs to address radionuclides (includes adding radium-226 and radium-228 as contaminants of concern for the Millenium source control area).					
	Factual Basis: Discovery of radionuclides in site soils and sediments (including Millenium soils/mining residuals) necessitated modification of site cleanup decisions. * Unable to provide cost increases or cost savings on an OU or ESD basis because the OUs were combined in the remedy action.					
Region 5 Fields Brook, OH Floodplains/Wetlands OU4	6/30/97 4/8/99 (ESD)	1/98 4/8/99	EPA	Soil	State concurrence expected.	Fed = Unknown* Contr. = Unknown* Est'd Increase = $ 2.0-3.0 M
	Type of Change: From - excavation and on-site containment of soils and sediments; backfilling and revegetation in floodplains/wetlands area; installing a cover in certain areas of floodplains/wetlands; To - modified all site RODs to address radionuclides (includes adding radium-226 and radium-228 as contaminants of concern for the Millenium source control area).					

Summary of Remedy Update Information for FY98 and FY99 for Sites With Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Increase
	Factual Basis: Discovery of radionuclides in site soils and sediments (including Millenium soils/mining residuals) necessitated modification of site cleanup decisions. ** Unable to provide cost increases or cost savings on an OU or ESD basis, because the OUs were combined in the remedy action.					
Region 5 St. Louis River- U.S. Steel, MN	2/22/89 6/4/97 (ESD)*	4/12/97 5/26/97	State	Soil, ground water	State has the lead responsibility on this site	Fed = not available Contr. = not available State = $5K Est'd Increase = not available
	Type of Change: From - coal tar settling basin; To - in-situ stabilization. OU P (Wire Mill Pond) - From - no action; To - removal and disposal.					
	Factual Basis: OU J - A competent clay layer to support building of a slurry wall for the settling basin could not be found. OU P - No action was originally chosen because it was believed that natural sedimentation would cover the waste and prevent exposure. Natural sedimentation did reduce contaminant levels, as predicted, and the remedy was reevaluated. *The remedy update was completed in FY97, but was reported in FY99.					
Region 8 - FY98						
Region 8 Anaconda Smelter, MT	3/8/94 11/6/95 (ESD)*	10/94 10/95	EPA	Soil	State provided review and concurrence; public meeting, fact sheet and public notice provided; close coordination with Anaconda-Deer Lodge County.	Fed = 100 hours Contr. = $0 Est'd Increase = $500 K

Summary of Remedy Update Information for FY98 and FY99 for Sites With Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Increase
	Type of Change: No change in remedy— increased area of operable unit.					
	Factual Basis: County informed EPA of discrepancy in property boundaries at Mill Creek. As EPA contemplated a change of Mills Creek boundary, EPA became aware of proposed development in Aspen Hills Subdivision which is adjacent to Mill Creek. EPA then decided to expand the Mill Creek boundary to include both areas. * FY96 information reported in FY98.					

Summary of Remedy Update Information for FY98 and FY99 for Sites With Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Increase
Region 8 Silver Bow Creek/ Butte Area, SSTOU, MT	11/29/95 8/31/98 (ESD)	5/1/98 8/31/98	State	Tailings, Soils, Sediments, Surface water, Debris, Ground water	EPA concurred; ESD placed in SSTOU information repository in several public locations.	Fed = 20 hours State = 100 hours Contr.= $8 K Est'd Increase = $50.8 M*
	Type of Change: From - removal of tailings and soils with some relocated into nearby repositories and some treated in place; removal of sediments into nearby repositories; excavation, treatment, and/or cover of contaminated railroad bed materials; and institutional controls, monitoring, and maintenance as required; To - modified alignment of Silver Bow Creek and channel profile, change in criteria applied for in-stream sediment removal, modified mine waste relocation repository, inclusion of sediment basins to contain contaminant overland flow run-on from off-site mine waste sources, change in schedule to implement remedy, elimination of treatment wetlands as end use in Subarea 1.					
	Factual Basis: In the course of preparing the SSTOU design, DEQ and EPA reevaluated certain elements of the remedy as described in the ROD in light of new site information developed in the design process. * An $81 million cash-out settlement with the PRP covered the increased cost reflected in this ESD.					
Region 9 - FY98						
Region 9 Lorentz Barrel and Drum, CA OU2	9/22/88 5/29/98 (ESD)	3/98 5/98	EPA	Soil, Debris	None.	Fed = 160 hours Contr. = $0 Est'd Increase= $108 K
	Type of Change: Unanticipated soil and debris removal.					
	Factual Basis: Materials found at site during preparation for capping were found to be unacceptable for retention under the cap and thus needed to be removed off-site.					

Summary of Remedy Update Information for FY98 and FY99 for Sites With Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Increase
Region 9 - FY99						
Region 9 San Gabriel Valley Area 2, CA Baldwin Park OU	3/30/94 5/99 (ESD)	3/99 5/99	EPA	Ground water	State concurrence.	Fed = 120 hours Contr. = $ 5 K Est'd Increase = $ 38.0 M (capital) plus $ 6.0 M/yr (O&M)
	Type of Change: From - cleanup of contamination caused by VOCs only, using air stripping with vapor phase GAC, liquid phase GAC and/or advanced oxidation; To - cleanup of contamination caused by VOCs, perchlorate, nitrosodimethylamine (NDMA), and 1,4-dioxane requires, in addition to the above, treatment by ion exchange and/or biological reduction.					
	Factual Basis: In 1997, it was discovered that, in addition to VOCs, ground water in the Baldwin Park OU is contaminated by perchlorate, NDMA, and 1,4-dioxane. Treatment of these contaminants needed to be added to the remedy.					

Summary of Remedy Update Information for FY98 and FY99 for Sites With Cost Increases

Region Site Name, State	Date of Original ROD Date of Change (ESD/ROD-A)	Date Review Commenced Date Review Completed	Change Initiator	Media	State/Community Involvement	Est'd Resource Demands - Fed/Contr. Est'd Cost Increase
Region 10 - FY98						
Region 10 Bunker Hill Mining and Metallurgical Complex, ID	9/30/92 1/18/96 (1st ESD) 4/18/98 (2nd ESD)	8/95 4/8/98	EPA, State	Air, Ground-water/ Surface Water, Sediments, Soils, Debris	Community discussions, fact sheets, task force meetings, public comment period.	Fed = Unknown Contr. = Unknown Est'd. Increase = $338 K
	Type of Change: From - industrial waste landfills—capping in place; creek channelization and lining; Smelterville Flats—removal and/or capping of mine wastes; decontamination of lead smelter and zinc plant stacks; demolition of zinc plant building and decontamination of phosphoric acid fertilizer warehouse; To - industrial waste landfills—excavation and consolidation; participation in storm drainage pipeline system; disposal of limited quantities of additional mine wastes to facilitate closure of the central impoundment areas; clarification of excavation goals in Magnet and Government Gulches; Smelterville Flats—diversion of precipitation from mine wastes in an approximately 60 acre area; demolition of lead smelter and zinc plant stacks; decontamination and reuse of zinc plant building and demolition of phosphoric acid fertilizer warehouse.					
	Factual Basis: The changes were deemed necessary by new information and enhanced understanding of the highly complex site.					
Region 10 Pacific Hide and Fur Recycling Company, ID	9/25/95 4/20/98 (ESD)	1996 4/20/98	PRP	Soil	State supported change; public comment period will be part of final consent decree process.	Fed = 50 hours Contr. = $0 Est'd Increase = Unknown
	Type of Change: From - remediation of lead-contaminated soils above 1,000 mg/kg, implementation of institutional controls and a five-year review; To - removal and disposal of lead-contaminated soils above 400 mg/kg, no institutional controls, and no five-year reviews.					
	Factual Basis: Sampling data showed that a small amount of additional remediation would remove all soil above a residential cleanup level.					